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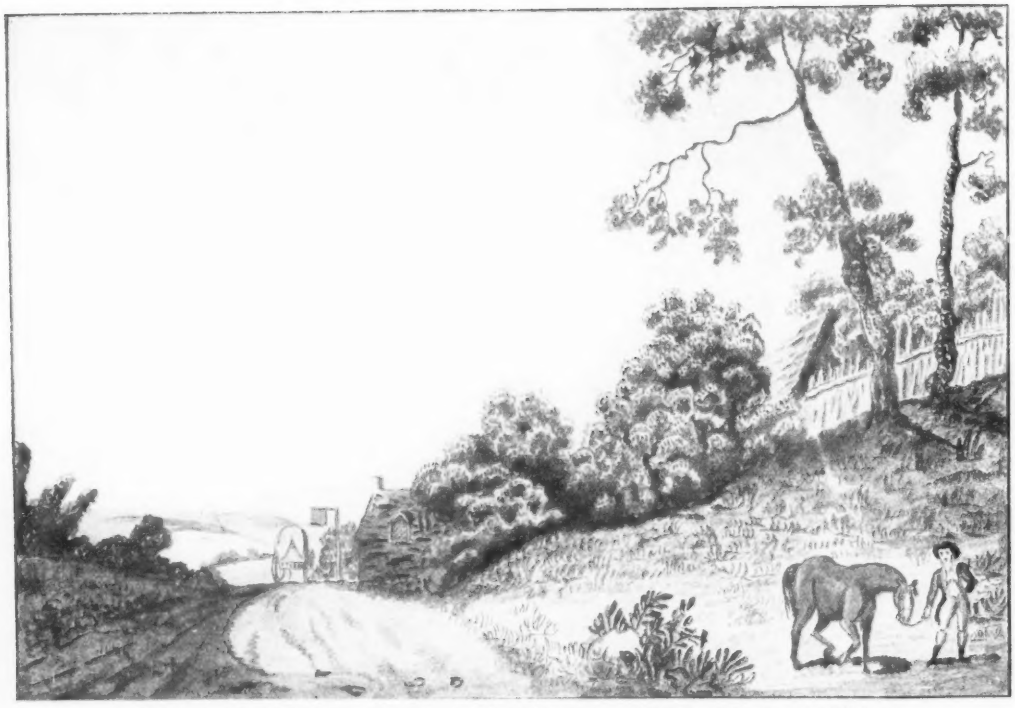


A drawing by Alfred Stevens made in his eighth year. From a collection of additional Stevens' drawings recently presented by Mr. Sigismund Goetze

JOURNAL OF THE
ROYAL INSTITUTE *of* BRITISH ARCHITECTS

VOL. 43. 3RD SERIES 21 DECEMBER 1935 No. 4

Journal

The International Exhibition on Tour

After a successful show at Leicester, the International Exhibition has gone on to Blackburn, where it was opened by Lady Maureen Stanley on 4 December. It has been staged in Community House, for which it was obtained by the Treasurer, Mr. John Yates. In her speech Lady Maureen Stanley said that unlike many exhibitions, this one really touched the lives of ordinary men and women; architecture had an incalculable effect on the mentality of the people. Mr. Q. Mangnall Bluhm [*F.*], President of the Preston, Blackburn and District Society of Architects, in thanking Lady Maureen Stanley and the officials of Community House, said that the architect to-day had to combine new materials and a new ideal with economy and efficiency. New forms and expressions were required; stagnation meant death in art and change was life. Among those present at the ceremony were the Bishop of Blackburn (Dr. P. M. Herbert), and the Mayor of Blackburn (Mr. W. Coupe, J.P.).

The next visit of the exhibition will be to Eastbury Manor House Museum, Barking, where it will be on show for a month in February and March, after which it will return to the R.I.B.A. The photographs which constitute it will then be reconditioned and placed in the general collection for the formation of smaller touring exhibitions, for which there is already a heavy demand. Some months must, however, elapse before any of these small exhibitions can be sent on tour. In order to meet immediate requests the special collection of three hundred photographs illustrating recent British Architecture, and got together for the Brussels Exhibition at the request of the Department of Overseas Trade, is to be circulated. It has already been booked for Newcastle-on-Tyne, Dudley, Stoke-on-Trent, Birkenhead, Hereford, Gateshead and Bradford. A second small exhibition is also in course of preparation and will start in circulation during the year. This is a special collection of photographs and drawings illustrating Aerodrome Planning and Design. It is to go to towns whose municipalities are considering the establishment of airports. Booking for this is proceeding.

Eastbury Manor House, Barking, which was referred to above, is a new municipal museum, a place unlike so many of those grim fortresses that house local collections, a place of beauty, and with an historic past which makes the house itself the chief exhibit of the museum. It is too a place with a future of more than merely archæological and antiquarian importance if those who administer the museum live up to the ideals which Lord Crawford outlined when he opened it at the beginning of the month. Some impatience is often expressed to-day with the "museum spirit"—a spirit which like another kind of spirit is nothing but an insubstantial resurrection of the past with none of the stimulating effect of yet another kind of spirit. A museum like Eastbury Manor fails to fulfil a very large part of its proper function unless it consciously sets out to be a creative influence and looks to the future, is a centre for discussion groups, for the local civic societies, a place where there can be exhibitions of contemporary art, such as the R.I.B.A. exhibition, where designs of local public buildings can be hung and criticised, where town planning can be made to mean something, and where the whole civic consciousness of a great and ancient borough can be stimulated so that the pious aspirations of a few far-sighted eccentrics can become the moving spirit of the whole community. How widely this is realised by the leaders of the museum world is shown not merely by this occasion at Barking but even more emphatically by the report of the luncheon given to museum curators and others by the R.I.B.A. Exhibition Committee on page 192. This report is worth reading, and will we hope be read, not only because it flatters our own sometimes narrow professional pride but because this work is a duty which the R.I.B.A. is attempting to fulfil to the limits of its ability.

A Housing Centre Exhibition

On Tuesday evening at the Housing Centre Sir Owen Williams opened the first of a series of exhibitions of the Elements of Housing. This particular exhibition, which has been excellently and dramatically arranged by Mr. Hazen Sise, shows in about fifteen sheets of photographs and diagrams the modern housing planner's problem—a typical unplanned London area due for clearance, the sociological issues involved,

amusingly and cleverly demonstrated by photo-montage diagrams, and finally a solution derived directly from the elements of the problem. The outstanding value of the exhibition is to be found in its clear presentation of the particular aspect of housing on which the modern expert has concentrated his attention, namely, the sociological-scientific solution of the problems of urban housing. It might be said that the "argument" presented by the diagrams is too simple; sunlight, which receives most attention, is of outstanding importance, but there are so many other issues that an argument based primarily on the sunlight or, as we choose to call it now, the insolation problem, can never produce a solution which is entirely satisfactory. Perhaps no solution can ever be satisfactory. The exhibition would gain enormously if the final sheets of diagrams could be accompanied by explanatory notes showing exactly to what extent the solution presented does really solve all the problems; how many of the original residents have been re-housed; what allowance has been made for the various classes of tenant; to what extent the optimum sunlight conditions have been met; what were the traffic conditions that forced the design of one long block which seems to infringe most of the sunlight principles emphasised in the "argument" diagrams. To ask this is to ask for something which may have been beyond the powers or intentions of the Centre and Mr. Sise, but if, as we hope, the exhibition is to go on tour it will be necessary to expand the exhibition in this way if it is to have its full effect on non-expert audiences. The Centre is to be congratulated on its enterprise and Mr. Hazen Sise on his intelligent and lively work.

Chinese Art and Western Understanding

By now many people will have been able to see the Chinese Exhibition, and each according to his kind will have received his impressions, a compromise derived from what he sees and what he brings in heart and head. Some, pottering from case to case, will just enjoy what is there for enjoyment, others with a background of knowledge will be capable of objective assessment of movements, of craft developments and dynastic influences, but few, potterers or pundits, can have passed through the galleries without some glimmer of the ecstasy which the loveliness of these perfect things can excite. But no one can easily submit himself before this panorama of four thousand years of art without wishing to know more than the eye alone can tell. For these a book written by Mr. Arnold Silcock, a Fellow of the R.I.B.A. and author of a recent paper in this journal, should be of particular value, not merely because Mr. Silcock, being an architect, writes from a viewpoint to which architects are likely to be sympathetic but because, as the *Times Literary Supplement* has said, "it has the character, paralleled in Chinese art itself as compared with European art, of a more complete solution of the information than most of the other books" on the subject. A collection of objects is evidence of the philosophy and life which together make up the art. The art loses half its meaning if there is no understanding of the influences that form it. In a remarkable leading article on the exhibition in *The Architect and Building News* some weeks ago it was said: ". . . the great thing is to capture some inkling of the quality and consistency of Chinese culture and of its identification with Chinese life. This cannot fail to bring us to a fresher view of our own problems and a clearer conception of what things in contemporary life are valuable and what we can afford to discard. . . . Chinese art is not always easy to accept at once, but the very effort we make in trying to coil our minds into the right attitude is infinitely refreshing and helps to break down the accretion of petty prejudice which constantly encrusts the intellect."

The A.A. "Panto"

The title, "Brick Bats," of the 1935 A.A. Students' pantomime adequately reflects its quality of uncoordination. It was in fact a collection of material, much of it sound, rather than a unified structure. Nevertheless it was both entertaining and sufficiently up to standard. The architectural references, mainly satirical, included a scene of pyramid building in which the bright young queen objected to its shape as not modern and demanded a cube for her tomb; a five-year-plan-ballet of A.A. students' life in which the Spirit of Beer occupied an important place; the examination of the ruins of the R.I.B.A. in 8000 A.D. by several archæologists—all strangely affected with lisps—who made wild guesses at the purpose of the building and finally settled down to a ferocious discussion on the meaning of the word WORNUM: a somewhat mixed scene in which two ancient British slaves were decorating the new house in Pompeii of a pair of lovers who differed on matters of art, culminating inevitably in the destruction of the town. The audience seemed most to enjoy, however, the shop which included matrimonial and similar undertakings in its services. A sort of Jubilee review of A.A. pantomimes since 1906 resurrected some good songs.

During the previous week we were also guests of the Blue Circle Players, who produced Priestley's *Laburnum Grove* at the Arts Theatre. Happening to tell a professional actor this, we were informed that "the Blue Circle Players are the best amateur company in London," which—from a professional—is very high praise. We found that we agreed with him.

And last, may we wish all members of the R.I.B.A. a Happy Christmas and a Prosperous and Happy New Year.

Photo: The London Passenger Transport Board

Practical Notes on the Design and Construction of Omnibus Garages

By F. O. BADDILEY [*A.*]

The following paper was submitted by the author as a Thesis in the Final Examination, July 1935, and was strongly recommended for publication by the Examiners. With the exception of the Introduction, the Thesis has been given in full with all illustrations.

In his Introduction the author states that many transport companies now recognise the value of employing architects for the designing of omnibus garages. This is because the architect is ceasing to be regarded as the man "who makes a building look pretty," but as he really is, the only person trained in efficient planning and in grasping and making provision for the requirements and processes connected with buildings either general or industrial. He states that he has dealt with the functional and structural aspects of the subject instead of with design, partly because scope for the latter is limited, but mainly because function is an over-riding consideration with the client. He emphasises that cost, both first cost and maintenance cost, is all important.

THE SITE

The site for an omnibus garage with attendant offices requires exceptionally careful selection. The following points require consideration :—

Cost

When it is realised that the greater part of the garage proper simply serves as a shed to house the vehicles,

it will readily be seen that an expensive site causes prohibitive overhead charges. In this connection the local rates should be borne in mind.

Position

The site should be on the outskirts of a small town centrally placed as regards the routes served. The advantages of such a position are :—

(*a*) The omnibuses have no long runs from the garage to commence their journeys.
(*b*) Convenience for re-fuelling, minor running attentions, changing drivers and conductors, supervision.
(*c*) Handiness of offices for general public.
(*d*) Proximity of dwellings available for staff.

An ideal arrangement is a corner site having a main street on the south and a secondary street at the side. In such an instance the office block would face the main street and could be treated as a subject for elevational design with consequent advertising value.

The garage proper would then be at the rear, its entrances giving on to the secondary road. The plain mass of walling resulting could be relieved by careful choice of brick, simple patterning, etc. It is suggested that a fairly large paved area be provided in front of the garage on which the vehicles can be manœuvred, left to warm up (and thus minimise the generation of poisonous fumes in the garage), put in formation for trips, refuelled, etc. This will enable the actual garage to be kept to the minimum size necessary merely to house the omnibuses.

Ground Levels

A very level site, approximately of the same level as the adjacent street, is a very great advantage, as the cost of forming a huge suspended floor (one storey only), heavily loaded, is tremendous when compared with a thin concrete floor, lightly reinforced, laid direct on the ground. (See Information Sheet No. 1.)

THE GARAGE PROPER

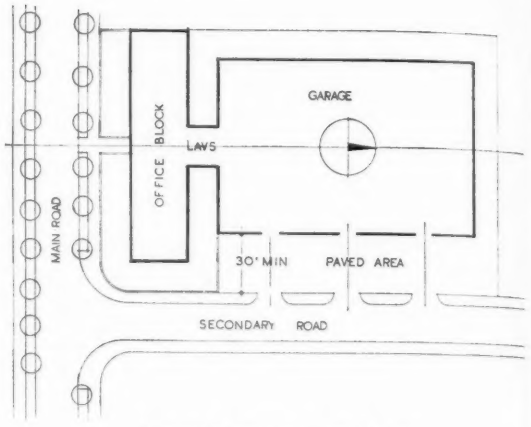
General

The essentials in the garage itself are :—
Spaciousness.
Economical working.
Efficient lighting (both natural and artificial).
Adequate heating and ventilation.
Freedom from isolated columns.
Ease of supervision.

Omnibus Data

No useful purpose is served by tabulating information on all makes of vehicles, the maximum size permitted of each type should be allowed for. The following table gives information on the *maximum* sizes of various public conveyances in the form of omnibuses.

Type.	Seats.	Length.	Width.	Turning Space.
4-wheeled—single deck ..	28-35	27′ 6″	7′ 6″	64′ 5″
4-wheeled—double deck ..	50-60	27′ 6″	7′ 6″	64′ 5″
6-wheeled—single deck ..	44	30′ 0″	7′ 6″	65′ 9″
6-wheeled—double deck ..	64	30′ 0″	7′ 6″	65′ 9″



From "Information Sheet No. 1"

Size of Garage

This is obviously determined by the maximum number of vehicles which are likely to be stored at *the same time*. In this connection it is suggested that future extensions be borne in mind when planning.

The actual dimensions are worked out to omnibus sizes (see table above) ; 10 ft. centre to centre across the width of the vehicles is taken, leaving 3 ft. clear at the walls, but where the shops, etc., adjoin, a space of 6 ft. must be allowed for the passage of hand trolleys, etc.

Lengthwise, for ordinary four-wheeled vehicles (27 ft. 6 in. long), 30-ft. centres are usual, whilst for the six-wheeled type centre to centre should be 32 ft. 6 in. The height in the clear, including doors, is usually 16 ft., although if heating pipes, overhead conveyors, etc., are carried under the trusses, 17 ft. to 17 ft. 6 in. is safer. The advantages of a paved area fronting the garage have been enumerated under the heading of "Site."

Doors

Much variation in practice occurs in the provision of main doors to garages. The more common method, especially in the south, where the weather conditions are more favourable, is to have the whole of the entrance side formed as doors between the stanchions. The writer does not consider this to be the most practical arrangement, and has had this opinion confirmed by garage officials. Among the drawbacks considered are the following :—

(*a*) Heat losses are considerable even when most of the doors are shut.
(*b*) Valuable wall space, especially for heating pipes, etc., is lost.
(*c*) Labour entailed in manipulating a number of doors, resulting in their often being left open when they ought to be closed.

(*d*) Strain on structure, especially roof covering, from inside wind pressure when sudden, violent gusts arise.

(*e*) Expense in first cost and maintenance of numerous doors and the resulting nuisance ensuing if they prove defective or necessitate overhauling.

Probably the only advantage of a large amount of door area is the ease of parking of the vehicles. The arrangement favoured by the writer is one inlet and exit doorway towards either end of the garage, with possibly one door in the centre to facilitate manœuvring. It is realised that this does not permit such rapid arranging of the vehicles as the more common method, but it is found that a garage foreman can quite easily garage the vehicles in the order in which they will be required, the outside space helping considerably. The writer considers that the advantages accruing, i.e., cheapness, conservation of heat and of wall space, protection from wind, reduced maintenance, etc., amply justify the design.

Type of Doors

Openings in clear—16 ft. high, 12 ft. wide. These may be of several types, e.g., roller, sliding, folding, and may be in wood or some type of sheeting on light steel framing. Although roller shutters and the folding type of doors are very popular to-day, the writer has found that the most satisfactory type of door having regard to ease of maintenance, simplicity of construction and low first cost are sliding doors. These should be hung to a first-class overhead track *outside* the walls to prevent fouling anything or anyone against the walls and also to conserve internal wall space. The usual sunk floor channel guide should be avoided owing to the readiness with which it is fouled by rust, ice, grease or grit carried by the vehicles, etc. An arrangement found very satisfactory in practice consists of the provision of one or two sets of $1\frac{1}{2}$ in. $\times$ $1\frac{1}{2}$ in. L-irons bolted to the floor, about 1 ft. 6 in. to 2 ft. long, in pairs set apart $\frac{1}{2}$ in. more than the thickness of the bottom of the door, and slightly splayed out on plan at each end. The bottom of the door should be protected either side with metal strips, say, 3 in. $\times$ $\frac{1}{8}$ in., counter-sunk screwed or bolted.

Wood-framed doors are probably more satisfactory than steel-framed, sheeted doors; they stand more knocks and lend themselves very easily to the insertion of small access doors.

Garage Floor

The load to be carried by a garage floor can be assumed in various ways :—

(*a*) A distributed load of 2 cwts. per foot sup., as required under L.C.C. regulations and many bye-laws.

(*b*) A rolling load of 3 tons (load on one rear wheel).

(*c*) A point load equal to half the weight on the back axle—up to 3 tons (incurred if a back wheel is jacked up).

Generally the loading (*a*) is taken, but it is advisable to take into consideration (*c*) as a garage hand may naturally jack up the vehicle in the centre of the garage instead of at the pits, thus putting a severe shear stress on the floor, more especially if the floor is suspended.

On good level ground, 6 in. of cement concrete reinforced with light mesh reinforcement and laid on hard filling will suffice, whilst if the floor is suspended, properly reinforced slabs must be carried on sleeper walls or reinforced concrete slab and mushroom column design adopted.

The floor should be finished with not less than $1\frac{1}{2}$ in. of grano laid immediately after the floor, and have falls to gulleys of 1 in. in 10 ft. Expansion joints must be provided especially around the edges of the floor next the walls. The falls on the floor need only be slight, as, except in the car-washing bay, water is rarely used on garage floors. Also the vehicles are easier to move by hand.

The surface should be kept covered and moist as long as possible after laying, and requires treatment to render proof against the oil and grease and dusting. Many patent preparations are available both for surface and integral treatment. The writer has found P.84 Silicate of Soda (diluted and brushed in the finished floor in two to three coats) equal to any other preparation, and it has the advantage of being inexpensive, easy to apply, and cannot readily be scamped, as frequently happens with integral powders and liquids for concrete work.

Walls.

The structure is usually steel framed, and the question of walls, therefore, generally resolves itself into the choice of panel filling between the columns. Points to be considered are :—

(*a*) First and upkeep cost.
(*b*) Strength and, in particular, resistance to bumps.
(*c*) Heat insulation. Weather resistance.
(*d*) Ease of fixing doors, windows, air inlets, etc.
(*e*) Finished appearance.
(*f*) Internal cleanliness.

The more usual materials are :—

1. Galvanised iron sheeting.
2. Asbestos cement sheeting.
3. Steel cored bitumen sheeting.
4. Precast concrete blocks.
5. Brick.

} All on light steel framing.

Probably the most satisfactory is 11-in. brick cavity walling which is cheaper than all the above, except (1) and (2), and scores heavily on required properties (see (*a*) to (*f*) above). The walls are usually built on concrete encased beams between stanchions and just under ground level.

Wall Finish

The interior walls are best painted, a dark colour on dado with light colours above. A great improvement, but expensive in first cost, is the provision of a white glazed brick dado to a height of 5 ft. An attempt

at cheerful colours internally should be made, the colours of the transport company usually lending themselves to adaptation. The garages erected under the writer's supervision had all steelwork painted vivid red (the colour of the vehicles), all heating and service pipes aluminium paint, walls painted black 5 ft. high, with a red line and warm stone colour above. The red patterning of the steelwork and aluminium piping present a striking contrast to the black corrugated underside of the roof sheeting.

Roof

The construction of the roof will depend on the span, but as an omnibus garage is unsatisfactory when less than 75 ft. wide, and is preferably 100 ft to 130 ft. wide, a single span pitched roof is unusual. The general roof design consists of lattice girders across the span at about 30-ft. spacing with cantilevered half-trusses either side at 10-ft. centres to carry purlins and with horizontal valley-gutters, the whole forming a series of pitched roofs with horizontal valleys. An arrangement of this type gives stanchions at about 15-ft. centres (alternate weight-carrying and alternate stiffeners to valleys).

This roof arrangement ensures a small cubical content comparative with floor area and, furthermore, is strong, economical, adaptable to roof covering and glazing, and provides good supports for the various service pipes, lighting fittings, etc. In the vicinity of the inspection pits and main workshop the roof framing should be strong enough to carry light overhead conveyor track.

Roof Covering

This may be of any conventional form, the most suitable being :—

1. Galvanised iron sheeting.
2. Asbestos corrugated sheeting (e.g., Everite Big-Six).
3. Iron covered bitumen and asbestos (e.g., Robertson's A.P.M. Sheeting).
4. Insulated asphalte on steel sheets (e.g., Ruberoid Steel Decking).

A table of comparative statistics is given below (approximate only).

Material.	Weight per ft. sup.	Heat Insulation "R"	Purlin Spacing.	Cost per sup. yd. laid. s. d.
1. Galvanised Iron ..	1¾ lbs.	.92	4′ 6″	2 1
2. Big-six Corrugated Asbestos	3½ lbs.	—	4′ 6″	3 0
3. R.A.P.M. Sheeting ..	2 lbs.	.966	4′ 9″	9 0
4. Ruberoid Decking ..	4 lbs.	2.72	9′ 6″	10 3

N.B.—"R"—Resistance is ability of various roof components to resist transfer of heat.

All the above are very economical in upkeep except (1), which is only suitable for temporary buildings. Although brittle, especially when new (2) has the attractions of low first cost, low maintenance, and high light-reflecting value. The latter (4), although most costly, proves an investment in its heat-insulation value, and is becoming very popular. The valley gutters may be cast iron of very heavy section or preferably asphalte on light concrete filling.

Inspection Pits. (See Information Sheet No. 2.)

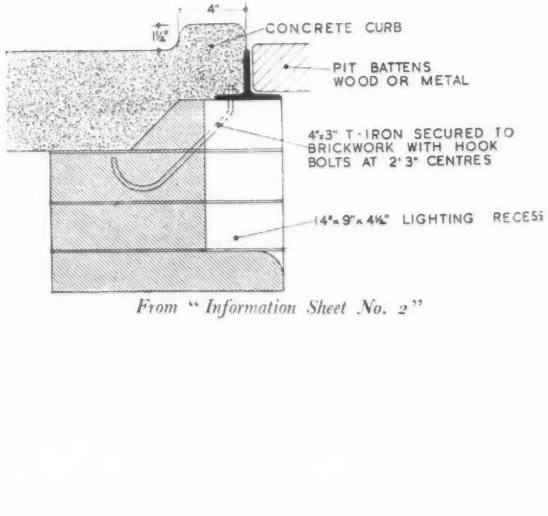
The layout and detailed design of inspection pits is of considerable importance, and great advances have been made in this direction of recent years.

The number of pits is governed by the number of vehicles serviced at the garage and also by the periods between servicing each vehicle. As a rough guide, one pit should be allowed to every 15 omnibuses. Each vehicle is periodically serviced according to mileage, and takes its place on the pits to a strict time-table. In addition to the pits mentioned above, one or two extra pits must be provided for vehicles which require immediate attention whilst in service.

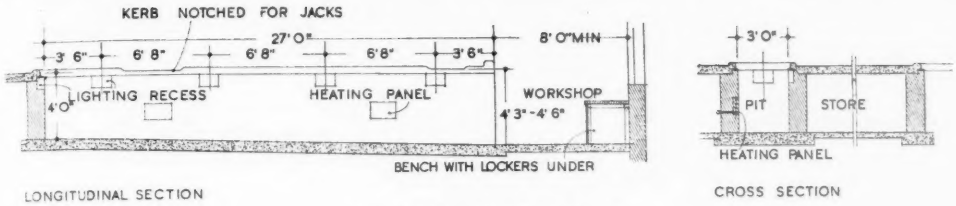
The pits are laid parallel to one another at 12-ft. centres, and preferably communicate at one end with the workshop (glorified communication trench) at the same level as the bottom of the pit, and usually called a sunk workshop. This arrangement makes for easy access into the pits, ease in conveying parts to bench and facilitates cleansing.

The inspection pits should be 27 ft. long, 3 ft. wide in clear, 4 ft. deep at top end, 4 ft. 3 in. to 4 ft. 6 in. at sunk workshop end. The walls are required to carry the weight of a vehicle, probably jacked up, and if in brickwork should be not less than 14-in. brick in cement. The walls must be finished with a surface at once easily cleaned, hard, and light reflecting, and for this purpose white glazed bricks are ideal (seconds or even good thirds will do provided the glaze is not broken). One of the patent cement cold glazing products now on the market is an alternative if the pit walls are in concrete. All angles, both internal and external, should be rounded and no projections into the pits are allowable, heating and lighting units being recessed (see lighting and heating).

A concrete kerb, 4 in. by 1½ in. high, with rounded angles and reinforced with a steel rod well tied into the floor, is run around each pit to prevent water and oil,


4"
1½"
CONCRETE CURB
PIT BATTENS WOOD OR METAL
4"x3" T-IRON SECURED TO BRICKWORK WITH HOOK BOLTS AT 2'3" CENTRES
14"x 9"x 4½" LIGHTING RECESS

From "Information Sheet No. 2"



From "Information Sheet No. 2"

etc., from the floor from running down the pit walls. Introduced into each long side is a 4-in. by 3-in. T-iron secured to the walls with $\frac{3}{8}$-in. hook bolts at 2-ft. 3-in. centres. The kerb is notched out for a length of 2 ft. at the axle positions to take the jacks. A large kerb, say 6 in. by $4\frac{1}{2}$ in. high, is provided at the open end next the sunk workshop to prevent omnibuses rolling over into the workshop. An overhead conveyor track with hoist and tackle should run across the open pits to the main machine shop.

SUNK WORKSHOP

The pits communicate with a sunk workshop at right angles, this being a development of the communication trench. Widening of the communication trench to take work benches is a very useful arrangement and saves a great deal of handling of parts.

The minimum width should be 8 ft., and it should be adjacent to an external wall so that light can be obtained immediately over the benches from windows. The walls should be glazed as for the pits and a strong bench provided full length next the wall. Cupboards, 18 in. to 24 in. wide, each partitioned, fitted door with lock and key and nameplate, should be provided under the bench so that each mechanic has a safe repository for his own tools, etc. At this bench are performed the minor mechanical operations. Communication with main floor level may be effected either by steps or a ramp, or both, and a stout railing around it must not be forgotten. A ramp, if possible, should be introduced to facilitate the use of workshop trolleys.

WORKSHOPS AND STORES

Many and varied workshops are required in connection with an omnibus garage, and a list is given below :—

1. Machine shop (lathes, drills, forge, etc.).
2. Engine, etc., cleaning.
3. Electricians' stores.
4. Dynamoes and electrical shop.
5. Battery charging and repairing.
6. General stores.
7. Small stores.
8. Tyre stores.
9. Joiners' shop (possibly also coach-building department).
10. Painters' shop.
11. Space for staff and service cars.

N.B.—The Sunk Workshop has been dealt with.

Generally

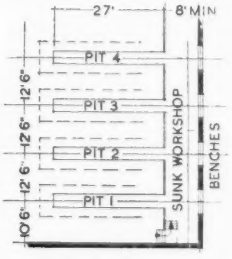
These shops can be economically housed in a lean-to down one side of the garage, with a depth of 15 to 20 ft., minimum height at eaves 9 ft., and which should be provided with ample top and side lighting. Ease of supervision by the garage foreman and strict segregation of the different shops are essential and can be ensured by making all partitions of 9-in. dwarf walling, 3 ft. 6 in. high, the remainder up to ceiling being in light steel framing covered with galvanised woven mesh wire netting. As a cheaper alternative to woven mesh netting ordinary small mesh expanded metal, either galvanised or dipped in preservative solution, or more simply, painted, might be used with advantage in strength and resistance to trespass, although the woven mesh wire netting presents a better appearance.

Each shop will require doors which should be double, 7 ft. high, 4 ft. 6in. wide, and be of steel framing covered with mesh as for partitions and fitted with locks. Each shop should have a small writing desk for recording purposes, as great store is put upon accurate statistics. Notes on any special requirements of the shops are given below :—

Machine Shop

This is the largest and most important and should be planned in conjunction with the company's engineer, who will most probably fit up this section himself.

The machine shop need not be partitioned off from the garage and can be economically placed adjacent to the pits, partly in the main garage and partly in the lean-to over the other shops. The main stanchions, as a result of this arrangement, will be placed in the machine space and serve admirably for carrying the power shafting. This shafting (electrically driven) will drive lathes, drills, punches, cylinder boring equipment, grinders and polishers, etc.



LAYOUT

From "Information Sheet No. 2"

An overhead conveyor track to the inspection pits is necessary. A forge will be required, and if the flue can be run up together with the heating flues it will be advantageous. Especially strong benches, together with ample

shelf and cupboard room, should be provided. If possible, all machinery and benches should be insulated from the floors, walls and steelwork.

Engine Cleaning (*approximately* 300 *sq. ft.*)

This shop should be placed as close as possible to the pits and provided with a connecting overhead conveyor track. The engines, gear-boxes, axle assemblies, etc., are here treated with a large amount of paraffin or other grease and oil remover, and in consequence this is a particularly dirty shop. The greater part of the greasy waste is produced in this shed and therefore, to reduce maintenance on the drains and also to keep on speaking terms with the local sanitary inspector, it is advisable to prevent as much as possible of this waste entering the drainage system. The method employed until recently by the writer is as follows :—

A good fall of at least 3 in. in 10 ft. is given to a centrally placed open C.I. grating over a sump approximately 4 ft. by 4 ft. by 3 ft. deep, in waterproof and greaseproof concrete. A trapped overflow is connected up to the drains. By means of a pump or a ladle the waste can be periodically cleaned out and taken to an approved tip.

Another scheme suggested by the writer is to equip the above sump with a sheet metal container of full size of sump, which could be lifted out, placed on a lorry and carried away for disposal. A spare container might be provided for use whilst the other was away.

A strong bench next the window and a space for a paraffin bin should be provided.

A more modern method consists of a "degreasing plant," which takes the form of a tank, approximately 4 ft. 6 in. by 3 ft. by 3 ft., containing a special chemical liquid, together with a small distilling plant for the cleansing and separation of the degreasing solution and the resulting grease. The parts to be cleaned are simply placed in the tank and left there for a short time and when lifted out are free from oil and grease.

Electricians' Shop (*approximately* 150 *sq. ft.*)

This is a small shop and takes the form of a store rather than a workshop. A plentiful supply of shelving and cupboards with one work bench for two mechanics are the necessary fittings.

Dynamoes, etc. (*approximately* 200 *sq. ft.*)

In this shop the electrical side of the vehicles is attended to, the main operation being the care of the dynamoes. Ample benching, shelving and cupboards are essential, and a small testing motor with ammeter, etc., and possibly a plug-cleaning machine are installed.

Battery Charging (*approximately* 300 *sq. ft.*)

In this shop the batteries are charged and repaired, and space must be provided for the following :—

(*a*) Battery charging plant, including rotary converter, etc.
(*b*) Tank for re-plating solution.
(*c*) Space for battery acid carboys.
(*d*) Space for battery trolleys.
(*e*) Distilled water tank or, preferably, a small electrically heated still for the manufacture of distilled water.
(*f*) Storage racks for batteries (very strong).
(*g*) Drainage bench consisting of a strong bench 12 in. high at front, 14 in. high at rear, 3 ft. back to front, all covered with 7-lb. lead and having a lead-lined drainage channel along the front.

General Stores (*approximately* 500 *sq. ft.*)

In complete charge of a responsible storekeeper, the general stores should be fitted with a vertical sliding servery which can be locked to prevent unauthorised persons, including other employees, from entering. A writing desk near this servery should be provided for recording out-goings, etc.

Tiers of shelving of various vertical spacings, arranged in rows with a space of 2 ft. 6 in. clear between, and planned to get the maximum of light, are installed. Shelving of adjustable heights is preferable.

Small Stores (*approximately* 150 *sq. ft.*)

The small stores opens off the large store, and is similarly equipped with shelving, but of closer spacing for small articles, and a number of drawers should also be provided.

Tyre Store (*approximately* 250 *sq. ft.*)

This store fulfils the dual purpose of storage place and fitting shop, together with repairs to tyres and inner tubes. No shelving is required. The electrically operated air compressor is installed here, and a small electric vulcanising plant is often fitted.

Joiners' Shop (*approximately* 200 *sq. ft.*)

This calls for the general requirements of a small joiners' shop with the usual work bench, shelving, lathe, etc., and is only used for small repair and maintenance work. In the case of a large garage where complete coach repairs are executed, the joiners' shop becomes a coach-repairing shop, and must be of adequate dimensions (including height) to house at least one vehicle in addition to space required for work benches, etc.

If the company build their own coaches an elaborate and well-equipped coach-building department is provided, usually as a separate building.

Painters' Shop

This shop must be sufficiently large to house one vehicle together with work bench, storage shelving, etc., and is preferably separate from the garage. The construction and planning should be as dustproof as possible and a temperature of 65° F. will be required to be maintained. It is essential that cupboards be provided for the painters' clothes and lavatory basins with hot and cold water must be available, but for the latter requirement those provided for the garage staff will suffice. If spray painting or cellulosing are proposed, the paint shop must be equipped with a first-class ventilating system to be in accordance with the factories acts. If a coach-building department is provided,

the painters' shop will naturally be adjacent and, of course, of larger dimensions and better equipped than outlined above.

Staff Cars

A space for, say, three staff cars and a service van should be provided, preferably in the lean-to which houses the shops and so leave the main garage floor free. One pit, approximately 6 ft. long, 2 ft. 6 in. wide and 4 ft. deep, should be installed for servicing.

Foreman's Office (*approximately* 120 *sq. ft.*)

A small office for the garage foreman is essential, the placing of which calls for careful consideration. It should be placed to give an uninterrupted view of all the inspection pits, workshops and stores and as many of the employees as possible. Somewhere between the pits and the machine shop is often a suitable site.

Some effort should be made to render the office as soundproof as possible by use of insulated double glazing, patent sound-absorbing blocks, etc. The office will have the usual office equipment, i.e., desk, cupboards and drawers, filing cabinet and telephone, and will necessarily be glazed all round. The chief consideration is to enable the foreman to supervise as much of the garage and its employees as possible from his office.

Garage Clerk's Office

Very often the company prefer to house in the garage itself the office to accommodate the engineer's clerks who are responsible for the petrol, oil, mileage, stores and general running returns. As quiet a position as possible should be chosen, say beside the stores, but not out of touch with the foreman. The usual office equipment is installed, and it is essential to utilise sound-proofing construction.

Lavatories for Garage Hands

The usual industrial practice is followed with the following precautions :—

(*a*) It must not be forgotten that a garage staff includes female cleaners, and therefore both male and female conveniences will be required.

(*b*) The conveniences should be well away from the office block and its conveniences as the office staff and garage staff are necessarily kept separate.

(*c*) The conveniences should be planned at a nearer point to the sewer than the garage drainage to avoid any soil drainage passing through the petrol and grease interceptors.

(*d*) Owing to the greasy nature of the work, ample hot water should be available at the wash basins. If funds permit, it might be worth while considering the provision of a hot-air drier for the mechanics' hands and thus dispense with towels. The " fluff " or " down " from towels on the hands of mechanics engaged in operations such as assembling of pistons and cylinders, bearings, etc., has a deleterious effect in the running in of such parts, and can cause serious wear of the parts, mysterious choking in carburettor jets, etc.

Rest Rooms for Garage Staff

Rest rooms, both male and female, should be provided and equipped with seats and a self-setting cooking range. A large part of a garage staff is at work on night shift, especially the cleaners, and facilities for making tea, warming meals, etc., are essential. These rooms are of use also to drivers and conductors in the spells of rest insisted upon under the new regulations. In some garages, by arrangement between the company and the staff, a proper canteen is provided, equipped with billiard table, card tables, etc., and can often be made a paying proposition to both sides.

DRAINAGE

The drainage of the garage and workshops only calls for special comment, the remainder following normal practice.

The provision of a space for car washing near the entrance with a fall of 1 in. in 5 ft. to a central channel 1 ft. 2 in. wide and 9 in. deep covered with gratings, ensures that very little water is used on the garage floor. The channel in the car washing space is made wide enough to be easily cleaned with a shovel for the removal of grit and mud. Alternatively, a street type gulley may be fitted, and is probably a superior arrangement.

The remainder of the garage floor, contrary to popular belief, receives very little water on its surface. On reflection, it will be realised that water is useless when applied with a view to removing oil and grease. The usual method of cleaning the floor is to spread clean sand and firmly rake off with a special scraper. The drains are thus not required to carry so much water as might be anticipated except from the car-washing bays. The drainage from the floors should be kept apart from rain water and soil drainage until it has passed through the grit, petrol and oil interceptors.

Gullies

Heavy C.I. " garage type " gullies, trapped, and with removable sediment boxes, are placed at approximately 30-ft. centres, the floor being given a fall of 1½ in. in 15 ft. to these. The fall on the floor should be kept as slight as possible to facilitate movement of the vehicles by hand.

The draining of the engine-cleaning shed has already been dealt with. The other shops and stores do not require any gullies or falls as the operations are clean and dry. No gullies should be allowed in the inspection pits. The floor is given a fall to the sunk workshop and opposite each pit is placed a gulley, the floor of the workshop being laid with falls.

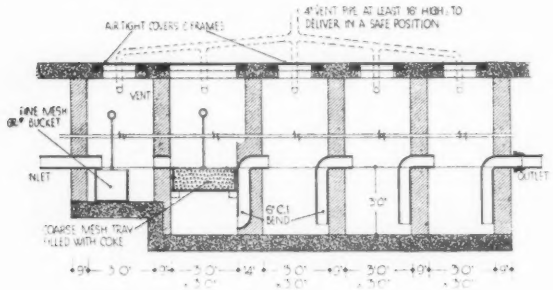
Drains

The drains actually under the garage floor should be in cast-iron (dipped in Dr. Angus Smith's Solution, etc.),

and encased in concrete. Rodding inspection eyes should be placed at every junction or change of direction, and every precaution taken to avoid the likelihood of having to break into the floor to attend to the drains.

Petrol and Grease Interceptors

Efficient trapping of silt, petrol, oil and grease is essential, and most sanitary authorities are very strict in the precautions which must be taken, as they are acutely aware of the resulting nuisance ensuing from lack of the necessary precautions. Petrol vapour is highly inflammable and liable to cause explosions in a drainage system, whilst oil and grease, apart from a tendency to obstruct the pipes by coagulation, have a serious effect on the efficiency of the filter and bacteriological beds of the sewage disposal works. A series of interceptors to deal with the drainage of the garage, pits and shops must be introduced, and it is essential that no rain water, soil effluent, etc., pass into these interceptors.



From "Information Sheet No. 3"

Information Sheet No. 3 shows a typical intercepting system devised by the writer, and consists of a solids catchpit, an oil and grease interceptor, and three petrol interceptors in series and in the order stated. Detailed practice varies in the arrangement of the interceptors, often proprietary fittings in cast-iron being installed. The detail shown has been found very satisfactory in practice, more economical in cost than the proprietary article, and can easily be varied in size to suit individual conditions.

The first chamber consists of a simple catchpit in which the solids—grit, mud, etc.—are collected on a tray fitted with lifting handles. This chamber should hold a small volume only of the drainage so that it passes as quickly as possible into the next chamber and so avoids collection of grease and petrol.

The drainage then passes into the oil and grease interceptor and the three petrol interceptors, all of which chambers are similar except that the grease interceptor is fitted with a removable tray which is filled with coke. The drainage is compelled to pass down and up a cranked pipe into the next, the chambers being of large volume to ensure a cooling effect. The grease and oil float on the surface of the first chamber and can easily be removed. The petrol rises to the surface of the chambers and evaporates, escaping up vent pipes. Air-tight manhole covers are essential, and a 3-in. vent pipe is taken from the top of each chamber into a common 4-in. vent pipe. This vent should be carried well up and discharge in a position which precludes any possibility of the petrol vapour igniting.

The walls should be finished in glazed brick, and the intercepting chambers are preferably placed outside the building so that cleaning operations, etc., do not interfere with the garage space.

WATER SUPPLY

An ample supply of water is essential, storage tanks being necessary if the supply is intermittent. A 2-in. main is run around the garage at ceiling level with 1-in. drops to required points for radiators, cleaning, etc. All points should be finished with automatic valves to avoid wastage. The points for filling radiators are placed just inside each *exit* as it is obligatory on the drivers to check up on the radiator water level before leaving the garage to commence a journey.

If the mains supply does not give enough pressure, a pressure washing machine feeding an overhead hose system over the car-washing bay should be installed. In the case of hard water supply a water-softening plant is an economy for the water required in the car radiators. If practicable, however, it is preferable to collect the roof water in a proper tank fitted with a filter, etc.

The usual fire appliances are installed, hydrants on 4-in. mains at required positions (usually at doors), chemical fire extinguishers, buckets, sand, and a fire alarm should be fitted.

AIR COMPRESSOR

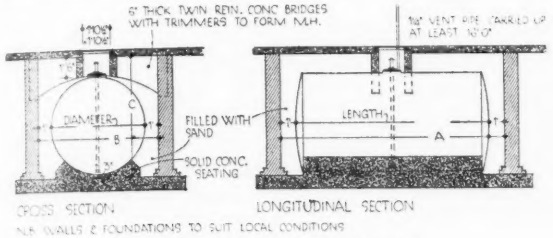
Most garages are fitted with an electric pump for tyre inflation, and this is usually placed next the petrol pump at the entrance.

In large omnibus garages another arrangement is gaining popularity, and consists of an air compressor placed in any convenient position, preferably the tyre shop, from which air bottles are carried to the vehicles as required. The air compressor has the advantage over the pump in that tyres can be inflated without having to move the vehicle to the pump position.

PETROL STORAGE

Petrol storage provision follows the usual practice, with the exception that only one brand of petrol is stocked. At least two tanks should be installed, and are best fixed outside the garage. The installation of these tanks is carried out by specialists, and Information Sheet No. 4 gives details of typical builder's work in connection with this. Two or more electric petrol pumps are used, either just inside or outside the doors, and a small office in close proximity is suggested for recording purposes. The pumps are placed at the

entrance, as all omnibuses fill up when coming into the garage. It is essential to consult the firms installing the tanks, etc., for particulars of builder's work.



From "Information Sheet No. 4"

TABLE OF CYLINDRICAL WELDED TANKS.

Capacity in gallons.	Tanks.		Vaults.		
	Length	Diam.	Length A.	Width B.	Depth C.
	ft. in.	*ft. in.*	*ft. in.*	*ft. in.*	*ft. in.*
1,000	10 7	4 6	12 7	6 6	6 3
1,500	12 9½	5 0	14 9½	7 0	6 9
2,000	10 4	6 6	12 4	8 6	8 3
2,500	12 8½	6 6	14 8½	8 6	8 3
3,000	13 1½	7 0	15 1½	9 0	8 9
3,500	13 7½	7 7	15 7½	9 7	9 4
4,000	13 2	8 1	15 2	10 1	9 10
4,500	13 2	8 7	15 2	10 7	10 4
5,000	13 4	9 0	15 4	11 0	10 9

FUEL OIL STORAGE

Fuel oil may be stored in tanks underground in a similar manner to petrol, as described and illustrated before, with one important variation. The fuel oil tank is fitted with a sludge cock in the bottom, thus necessitating a deep manhole for access to it. As fuel oil is non-inflammable, the makers now suggest that the tanks be fixed above floor level and have either a gravity or hand-pump feed.

OIL WELLS (LUBRICATING)

The oil wells may be installed in any convenient position in the garage, and are usually placed in the hands of a specialist. As many as six may be required, and these are laid side by side under the floor, each with an access manhole and hand pump and probably a dip-stick. For economy and cleanliness a concrete tray may be formed around the pumps with falls to a channel and shallow sump at the front. The oil so collected is perfectly fit for use after straining.

The oil tanks vary considerably in size and shape and fittings with the different oil companies, and the firm installing them must be consulted before detailing the builder's work, which is, however, very similar to that for petrol tanks, though on a smaller scale.

NATURAL LIGHTING

Given a roof construction as suggested earlier in this article, the matter of top lighting becomes a simple one. Roof glazing, preferably one of the many excellent lead-sheathed patent glazings with wired plate glass, is run along the north slope of each unit roof. A simple rule for determining the area of roof glazing is to allow one-fifth the floor area. The glazing will not be required to extend from the ridge to the valley gutter, but probably only about half this expanse. In this case it is strongly recommended that the glazing extend from the gutter to its required height up the roof slope rather than be placed centrally with roof sheeting above and below. This practice is cheaper as lead flashings are minimised, the light is introduced at a lower level, and the glazing is very easily cleaned from the valley gutter.

As previously mentioned, top lighting should be reinforced by window lighting in the workshops, stores and pit workshops. The windows are very satisfactory as standard metal factory type casements with centre-hung opening lights.

ELECTRIC LIGHTING AND POWER INSTALLATIONS

The electric lighting and power installations should be designed by a consulting electrical engineer, although in many cases the company's engineers will be well qualified to aid the architect.

The installations follow industrial practice, and must comply with the various factory acts, the I.E.E. Regulations and the regulations of the supply company.

Generally

All wiring should be encased in heavy solid drawn galvanised screwed steel tubing with watertight iron boxed switches and plug sockets, H.O. type lamp-holders with skirt, and all fuse and distribution, switch and meter assemblies should be the fully protected iron-clad H.O. type. A regulation often overlooked is that which calls for switches to be placed 6ft. above floor level. An ample supply of lighting and power plugs should be provided.

It is proposed to deal only with specialised requirements of omnibus garages in this Thesis.

General Garage Lighting

For the general garage space distributed lighting only is required, and is obtained from fittings hung to steelwork at approximately 20-ft. centres in both directions and 10 ft. from walls. For this arrangement 14-in. industrial type reflectors (e.g., Benjamin No.F.4733) fitted with 150-watt lamps provide adequate lighting. Over the pits similar type reflectors, but with 100-watt only lamps, are installed, the placing being as follows :—One overhead fitting over the front and one over the back end of each pit—placed midway between the pits (not over the pits, where the light would simply fall on the tops of the vehicles).

The latest garage built under the writer's supervision embodied a different type reflector from that usually employed and described above with a consequent saving in current consumption of about 33⅓ per cent. The reflectors adopted were 4-way directional reflector lanterns (e.g., G.E.C. No. F.5161) with 100-watt lamps and similar 3-way reflectors with 75-watt lamps. The reflectors are commonly used for street lighting, and although cost is approximately twice that of the ordinary good-class industrial type the subsequent saving of current and admirably efficient distributed lighting produced, more than balance the extra first cost.

Workshop and Store Lighting

Industrial type reflectors or ordinary plain pendants are usual, the latter being quite suitable for the general lighting. For the benches, and especially those in the sunk workshop adjoining the pits, universally adjustable sectional arm brackets with 24-in. projecting arms, enamelled iron reflectors and 60-watt lamps should be provided at a general spacing of 10 to 12 ft.

Inspection Pits Lighting

This is probably the most important and also the most difficult item in the lighting scheme. Many methods have been adopted ranging from the portable lamp connected to a plug to small floodlights on portable telescopic stands.

The requirements of pit lighting are very severe, and include :—Efficient light thrown upwards under the chassis ; fittings which are placed unobtrusively and not easily damaged ; fittings which eliminate flexible cables with the consequent risk of accidents.

The most satisfactory scheme of pit lighting known to the writer is indicated on Information Sheet No. 2. Nine small prismatic fittings (G.E.C. No. 325 Wigan Hinged Pattern) are installed, four along each side and one in the end wall of the pits. Each fitting is placed as near the top of the pit as possible, and is fitted into a 14-in. wide, 9-in. high and 4½-in. deep recess in the glazed brick, all angles, both internal and external, being rounded. The conduit to the lights may be in a 3-in. by 1½-in. recess running around the pits (here also the glazed brickwork should have rounded angles), or, better still, in order to preserve the unbroken face of the wall, run on the outside wall of the pits. This may be objected to on the grounds that the tubing is inaccessible. The writer overcomes this drawback by excavating between each pit and forming low stores leading off the sunk workshop, the wiring being run on the surface of the stores walls, whilst the storage space thus obtained is very useful.

The lights are controlled in pairs by switches on the work benches opposite the mouth of each pit, a master switch being provided for the pilot. To provide against wastage, above each switchbox is placed a red " Neon " pilot lamp, which glows whilst any of the lights in the pits are burning. Each pit should also be provided with two switch plugs, flush fitting.

Power and Plug Points

Power points or plugs will be installed for many or all of the following, as required :—Battery charging plant ; air compressor ; machine shafting ; lathes, drills, punches, etc. ; welding plant ; ventilating fans ; petrol pumps ; water distiller ; degreasing plant ; vulcanising plant.

Alternative Supply

It is advisable to arrange for a secondary supply in case of a mains failure, and this can be effected in one of the following ways according to circumstances :—

1. Connection to a second circuit of the supply company. This is effective except in a grid breakdown.
2. Alternative source of mains supply—often available in colliery and industrial areas from another industrial undertaking.
3. Automatic storage batteries—only useful for temporary safety lighting.
4. An oil or petrol engined generating plant—expensive to install.

VENTILATION

The ventilation of omnibus garages is very important, and, unfortunately, is usually very inefficient, or even not provided for. Many cases of mechanics collapsing owing to the presence of carbon-monoxide generated by the engines have been brought to the writer's notice.

As the cubic space per worker is very large in this type of structure the likelihood of the air being rendered unfit by human agency is very remote. Thorough ventilation is required almost wholly on account of the highly poisonous carbon-monoxide.

The writer has determined that a system of ventilation calculated to give two and a half to three changes per hour is ample. If an open space is provided in conjunction with the garage, as strongly advised, whereon the engines can be warmed up outside the building, one and a half to two changes per hour is sufficient.

The ventilation system, usually extract type because of its low cost, can be effected by natural ventilators, by extract fans, or a combination of both. The writer has found a combination of both systems very satisfactory and inexpensive. Natural ventilators are placed two along each ridge, and in the base of each alternate ventilator is fixed, horizontally, an electric extract fan. The fans are only required at busy times or in calm and sultry weather when there is little air movement.

Adequate air inlets, non-adjusting to avoid interference by the employees, should be provided in the base of the walls, and behind radiators if possible.

HEATING

Whilst the risk of damage by frost is small, especially in the south, the fact that men and women have to work in the building both day and night must not be overlooked, and garage heating should receive more attention than it usually gets.

All garages erected under the writer's supervision are equipped with first-class heating installations, and this is insisted upon by the transport company. (*N.B.*—The garages referred to are in the far north-east of England, where climatic conditions are admittedly more severe than in the south.)

A minimum temperature of 50°F., with the outside temperature at freezing point, should be provided for, 54°F. being more comfortable. Many methods are available, but low pressure hot-water heating is probably still the most economical, if not in first cost, certainly in running, and most likely in maintenance costs. According to the cost of fuel available coal either stoked by hand or robot-stoker, oil- or gas-fired boilers, or electric thermal storage may be adopted in conjunction with the low pressure hot-water heating system. A consulting heating engineer should be employed to design the scheme and get out statistics of comparative installation and running costs.

Twin boilers are advisable, so that only one need be in commission in mild weather or in the case of overhauling. Plenty of circuits should be provided, dips or traps being avoided, and ample piping at roof level to keep the air rising is suggested.

Wrought-iron piping is strongly recommended instead of cast iron owing to its higher resistance to breakage. If it is feared that the radiators or pipes will be damaged by the vehicles a raised kerb, say 9 in. high and 1 ft. wide, around the walls will ensure their safety, although the precaution is unnecessary as the omnibuses are moved with great care inside the garage.

Inspection Pit Heating

The heating of the pits calls for careful consideration. Usually the pits are either not heated at all or are provided with a heating pipe running all round the face of the walls. The pits should, of course, be heated, but the exposed pipe is a great obstruction in the pit and liable to damage by falling parts or mechanics using it as a foot-rest. It is suggested that flush heating panels be installed in the pit walls, the piping being run on the other side. If stores between the pits are adopted, as suggested previously, these pipes will be fully accessible.

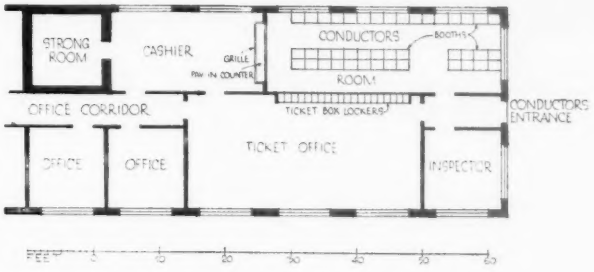
Hot Water Supply

A plentiful supply of hot water is essential for washing, filling radiators, etc., and may be obtained from a calorifier worked in conjunction with the main heating system, or, as is more usual, from a small independent boiler. The latter arrangement is better because hot water will be required all the year round, whereas the heating system will be out of commission in hot weather.

OFFICES

The office block follows usual office buildings layout, and it is proposed to deal only with special requirements for this particular case.

The accommodation varies according to whether the building is the main office or merely the necessary offices in connection with a secondary garage.

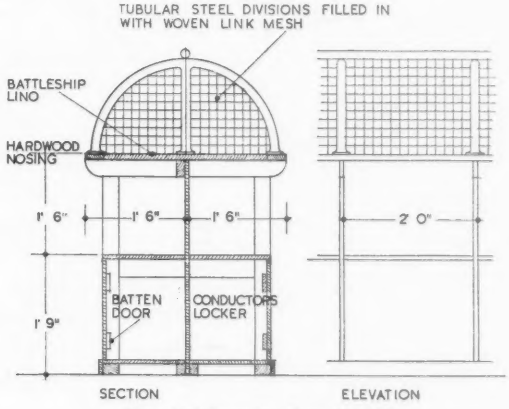


From "Information Sheet No. 5"

The following are the minimum requirements for *all garages* :—Traffic manager and clerk ; cashier, including clerks and strong room ; general office ; ticket office ; conductors' room ; inspectors' room ; enquiries and telephone exchange (next public entrance) ; staff lavatories. *Additional if main office* :—General manager ; private secretary to the above (and communicating) ; resident director ; board room ; private lavatories to the above (separate entrance to the above if possible) ; comptometer room ; typists ; private hire and clerks (near public entrance) ; insurance and clerk ; stores, invoices, sales ; statistics and clerks ; traffic commissioner's clerks ; chief engineer and staff (including drawing office) ; building maintenance surveyor ; lost property office.

All the above follow general office building practice with the exception of the cashier's office, ticket office and conductors' room, which call for special planning and equipment. See Information Sheets Nos. 5 and 6.

These three rooms are planned *en suite* on the ground floor, the ticket and cashier's offices being accessible from the office corridors, whilst the conductors' room should communicate with the open in a position as close as possible to the garage and separate entirely from the public and general office entrances.



From "Information Seeet No. 6"

The conductors' room is fitted with a number of booths which consist of a series of desks, each 2 ft. wide by 1 ft. 6 in. deep, with a shelf and locker under, and partitioned off from each other. The partition may be composed of a 6-in. high board only, or preferably of a woven mesh on tubular standards to a height of 1 ft. 6 in. The shelf under is to receive the conductor's ticket box whilst he is counting up his cash, filling up his ticket sheet, and making up his requisition sheets. The locker may have a lock and key, and be for the use of the conductor to hold his own belongings, etc.

Adjacent to the conductors' room is the cashier's office, separated by a wide counter and a strong mesh-covered grille. No communication between the two rooms by a door is required. The cashier's office must be fitted with a large safe or preferably have a small strong room.

When the conductor has checked in his cash and prepared his requisition for the next spell on duty his ticket box is ready for attention in the ticket office. The best method of dealing with this is as follows :— Between the ticket office and the conductors' room the wall is partly composed of a series of lockers, each a little larger than a conductor's ticket box, usually about 21 in. wide by 18 in. deep by 8 in. high in clear, fitted with doors on the conductors' room side only and left open on the ticket office side. The doors are provided with individual keys and number plates, and one locker is allotted to each conductor. In practice the conductor places his ticket box in his own locker and locks the door, retaining the key. The ticket boxes are then only available to the ticket office staff on the other side, who attend to the requisitions ready for the next shift, replacing each box when dealt with. The ticket office should communicate with the cashier's office if possible. Near the conductors' entrance is often planned an inspectors' room, with communication to the general office, usually via the ticket room.

AUTHORITIES CONSULTED

The writer is unaware of any publication on the subject, and has incorporated in this Thesis much of his general practice, many of the details and suggestions being original. A great deal of assistance in both normal practice and in the preparation of this Thesis has been obtained from the undermentioned, who have had a great deal of practical experience in the subject :—

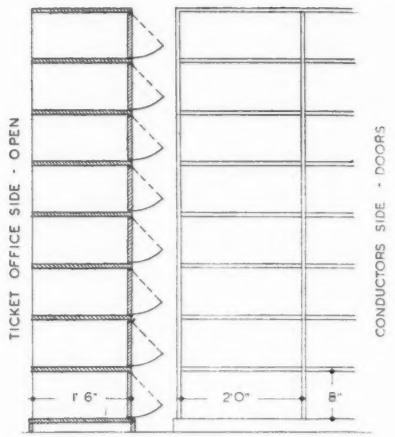
A. H. Fennell, L.R.I.B.A. The writer's employer.

The following officials of the Northern General Transport Co., Ltd. :—

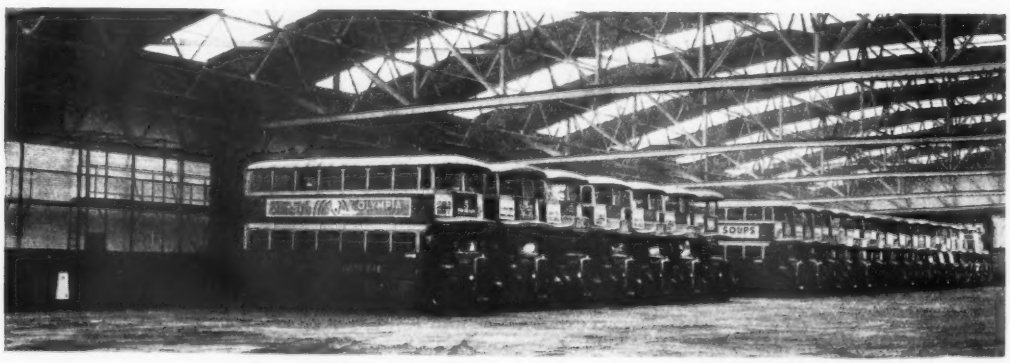
Major Hayter, O.B.E., A.M.I.Mech.E.	Chief Engineer.
Mr. Whaler - - -	General Garage Manager.
Mr. Banks, B.Sc. - -	Building Maintenance Engineer.

And as consultants :—

Mr. J. T. Leake, M.I.H.V.E.	Heating and Ventilating Engineer.
Mr. J. Moodie, A.M.I.E.E.	Electrical Engineer.



From "Information Sheet No. 6"



[*Photo: London Passenger Transport Board*

THE CLOCK OF ST. DUNSTAN'S CHURCH, FLEET STREET

By PROFESSOR A. E. RICHARDSON F.R.I.B.A.

London has been deprived of so many historic features that the return of this clock to its old position is an event.

The history of the clock touches upon many points of interest. As far back as 1478 there was a similar piece of mechanism in the neighbourhood. Stow described a conduit erected at that time near Shoe Lane, with Angels having

> "sweet-sounding bells before them; whereupon, by an engine played in the tower, they, divers hours of the day and night, with hammers chimed such an hymn as was appointed."

"Paul Jacks" were familiar to the gallants of Queen Elizabeth's day as Decker observed. Many old churches and public buildings had automatons to strike the hour. The famous Jacquemarts at Dijon are well known.

But of all the clocks familiar to Londoners of the eighteenth century that of St. Dunstan's was the one that made an especial appeal. It was regarded as among the first of "London's Wonders" of the time of Charles the Second. The old church had escaped the Great Fire, and possibly as a thank offering the Parishioners decided to erect a handsome clock. Thomas Harrys, clockmaker of Water Lane, Blackfriars, was approached for an idea. In due course he submitted a statement of what he proposed to do. There were to be

> "two figures of men with poleaxes to strike the quarters. I will do one thing more which London shall not know the like; I will make two hands show the hours and minutes without the church upon a double dial which will be worth your observation and to my credit."

The clock to-day is the same with the exception of the clock-case and the carved bracket of Father Time which was altered in 1738. Apparently Father Time was too weak to support the heavy beam. In consequence he was deprived of his head, which was placed on a Jackley behind the scroll supporting the bracket. This alteration cost the parish £110. The clock itself was originally framed within a square ornamented case finished with a semi-circular pediment. In front of the case facing the street was a standing figure similar to the fat boy of Panyer Alley. The alcove containing the two Jacks is exactly as designed in 1671. Hatton praises this work in his Guide for 1708.

> "The ornament of this church consists (on the outside) of a Nich and Pediment at the E. end of the clock and one the S. side near the W. end, here between two Figures of Savages or wild men, well carved in wood, and painted natural colour, appearing as big as the Life, standing erect, with each a knotty club in his Hand wherewith they alternately strike the Quarters, not only their arms but even their Heads moving at every blow; They are placed so under an Arch of the clock-house, which is of the Ionick Order, as to be visible to such as pass on the S. side of the Str. whence they are more admired by many of the Populace on Sundays than the most elegant Preacher from the Pulpit within."

No doubt when Samuel Pepys paused to watch the figures "arguing the hour" he doubtless recalled his encounter one dark night nearby with two Rogues armed with clubs.

In 1766 the statue of Queen Elizabeth, which stood on the west side of Ludgate, was put up at the east end of St. Dunstan's Church; and the other figures, King Lud and his two sons, were deposited in the parish bone house. In December, 1829, old St. Dunstan's was demolished and many of its effects were sold. The clock and the figures of King Lud and his sons were purchased by the Marquis of Hertford for two hundred guineas. The news of the passing of the clock and the

Jacks caused Charles Lamb to shed tears. These relics of old London were to rusticate for a century in the grounds of St. Dunstan's Villa, Regent's Park. Here for years the clock was wound up daily and the giants in their penthouse received fresh coats of paint.

The adjustment of the clock-house to suit the scale of the low building at the side of John Shaw's Perpendicular" tower was part of the reconstruction. It was imperative that the clock should not project over the public roadway. The original clock works made by Thomas Harrys in 1671 have been overhauled. The carved figures have been made to perform. Every part of the original structure has been reinstated without change or addition. The colouring of the Jacks as "Ethiopians" is quite topical of current events. Thomas Harrys is said to have received £35 for his work on the works of the old clock, with an additional sum of £4 per annum to keep the whole in repair. The poet Cowper in his Table Talk comments on the two giants:

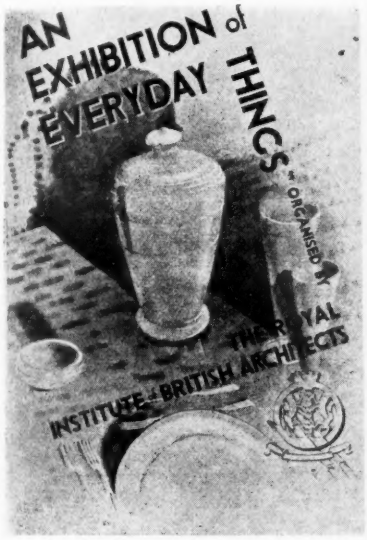
> "When Labour and when Dullness, club in hand,
> Like the two figures of St. Dunstan's stand.
> Beating alternately in measured time,
> The clockwork tintinnabulum of rhyme."

The statues of King Lud and his two sons, Androgeus and Theomantius, now stand within the entrance to the vestry. It was due to the care of Sir Francis Gosling that these statues as well as that of Queen Elizabeth were saved from destruction when Ludgate was taken down together with the gate of the City. Lord Rothermere, by his generous gift, together with the cost of re-erecting the clock penthouse and figures has restored one of the landmarks for which the district was famed.

Posters for the R.I.B.A. Exhibition of Everyday Things

A CRITICISM OF THE DESIGNS BY JOHN GLOAG

This criticism of the poster designs submitted by students from "final" schools throughout the country has been written by Mr. John Gloag. At all times the Committee has been fortunate in being able to enlist the enthusiastic help of laymen, whose specialised knowledge is essential to the success of their work. Here Mr. John Gloag has been able to apply his expert knowledge of the advertising world, his knowledge of typography and the design of "everyday things." It is only those who know the full extent of this generously given help who can properly express the Committee's gratitude.



The poster competition for the Exhibition of Everyday Things, organised by the Institute, produced a number of entries which showed a high standard of design. There was a noticeable tendency on the part of many competitors to regard the poster as an opportunity for making a neat, balanced, orderly pattern, rather than something striking and dramatic and memorable. But there is nothing static about the three designs which secured prizes, and the winner of the first prize has created a vigorous signal that fulfils the main function of a poster, which is interruption without irritation. It is quite clear from this competition that many architectural students possess a sense of typographical fitness and real feeling for the dramatic exploitation of typefaces.

Although the conditions stated that the types used were to be based on either Gill Sans, Erbar, Caslon Old Face or Bodoni, nobody regarded that as a limitation, and the competition requirements in this were only disregarded by one or two competitors.

Some competitors, obviously led away by the idea that "stunt" is the key word to all advertising, produced what can only be described as complications, and overlooked both visibility and legibility (by no means the same thing).

One requirement of the competition which was maddeningly disregarded by some competitors (or maybe it was the fault of their schools), was that the drawings sent in had to be suitable for direct reproduction: many of the drawings were rendered unsuitable for direct reproduction by labels gummed on to the face of them bearing the identification; and the drawings, inevitably, would have to be damaged by the detaching of those labels.

The first prize winner, Mr. J. Churchill Simpson, of The Architectural Association, London, has produced a design of real distinction; and his method of safe-

guarding legibility is ingenious. He has brought some of his lettering into three dimensions where it impinges upon the background of the design ; he has carried the eye round angles without exasperating it ; and he has left the lettering which must be added about the locality of the Exhibition to form a horizontal base to the design, so that it does not compete with any other lettering. This was not done by any other competitor : they all arranged a space, and a space only, for the lettering which would be added to their design ; but Mr. Churchill Simpson has made the missing lettering an integral part of the design. He has contented himself with a discreet suggestion about the subject of the Exhibition ; but the winners of the second and the special prize have been more specific.

Many of the competitors seemed to think that everyday life is spent entirely in the kitchen. This obsession with the apparatus of cooking gave too much prominence to mere hardware, and however graceful and exquisite a kettle or a tap may be to a *pukka* functionalist, such concentration on the bleaker forms of utility is apt to leave the general public cold. The poster was intended to appeal to the general public. The winning designs did.

TOURING EXHIBITIONS

A VISIT FROM DIRECTORS AND CURATORS OF PROVINCIAL ART GALLERIES

As a result of past and recent touring exhibitions organised by the Exhibition Committee, a large number of contacts have been made with the curators and directors of the various provincial museums and art galleries, and it was felt that the time had come to strengthen this relationship and to bring the various curators together, so that they could discuss in greater detail the policy already outlined in the R.I.B.A. JOURNAL and the Journal of the Museums Association. In accordance with this plan, the directors and curators of the principal art galleries and museums in the country were entertained to lunch on Tuesday, 3 December. Some twenty-five were present, and as they came from as far away as Exeter and Sunderland they were able to represent fairly the measure of interest shown in this scheme. The visitors were well balanced by some twenty-four members and officials of the Institute who were also present.

After the chairman had welcomed the guests and explained the purpose of the meeting Sir Eric Maclagan, Director of the Victoria and Albert Museum and President of the Museums Association, said he could at once accept the scheme on behalf of his colleagues and congratulated the Royal Institute on its enterprise and vision.

Mr. R. A. Duncan, hon. secretary of the Exhibition Sub-Committee, then gave a detailed account of the scheme and of the reasons why it had been established. (For further information readers are referred to the R.I.B.A. JOURNAL of 12 October.) Mr. Duncan also stressed the fact that the general public would take no interest in "fossils" unless their interest was first awakened by other means. These exhibitions, therefore, were not to be considered as a new departure or as a break with the past, but the result of continuous and logical development. The Institute itself had neither the means nor the organisation to place its exhibitions before the public by hiring halls or undertaking personal responsibility for the touring of these exhibitions, and it was therefore only through the museums, which already had magnificent contact with the public, and which were expected to provide the public with the best means of its being educated, that this work could be done.

One might ask why the Institute did not go ahead even faster than was proposed : as it had already been pointed out both in articles on this scheme and in correspondence, that the scheme must take from three to five years to come into full operation. The answer was two-fold. The first, the question of expense. A major exhibition, such as the Exhibition of International Architecture, cost in all not less than £1,000 to organise, and therefore it would be quite impossible for the Institute to arrange an unlimited number of travelling exhibitions, and, in fact, the speed with which this scheme would come into operation would depend very much on the support which museums and art galleries could give. It was felt, therefore, that in their own interests it would not be unreasonable to ask museums and art galleries if they would assist the Institute in every way possible when taking an exhibition.

The second answer to the question was that the necessity for careful selection and due consideration before work was selected for exhibition inevitably made progress somewhat slow.

Mr. Duncan finished by giving details of the future programme, which may be summarised as follows :—

A MAJOR EXHIBITION FOR 1936—"EVERYDAY THINGS"

This exhibition was a temporary departure from the Institute's usual photographic scheme. It would consist of furnishings and fittings which an architect would like to see introduced into the houses he built. A choice freely exercised in a way that very rarely occurred in practice, where the will of the client had always to be considered and his wishes carried out. This exhibition would be called "Everyday Things," and would be

confined to furniture and fittings suitable for a house costing from £750 to £2,000. It must be fully realised that in the space available it would be quite impossible to give more than a cross section of British industry.

The exhibition was to consist of the following sections : Furniture, ceramics, glassware, silverware and cutlery, kitchen equipment, plastics, dressing-table equipment, textiles, building equipment, building finishes, and church fittings. It would not be possible to tour this to more than a few centres, as the space required was much greater than that normally available.

An Exhibition of British Architecture

This exhibition would consist of photographs which were shown by the Royal Institute at the Brussels Exhibition. The tour had already been booked for some twelve months from March 1 of next year.

In addition, it was hoped that as a result of the work now in progress on the permanent collection it would be possible to arrange at least two more minor exhibitions to start next October. Plans were already in hand for the major exhibition of 1937, and would be announced in due course.

Mr. Duncan was followed by Mr. S. C. Kaines Smith, Keeper of the City Museum of Birmingham, who spoke of the needs of the larger museums. It was most important, he said, that any exhibition should be organised with reference to local needs and topicality, and he did not see how an exhibition prepared for circulation to a large number of centres would be of benefit. On the other hand, if, when some piece of architectural vandalism was imminent, a museum could immediately obtain a collection of photographs showing examples of architecture for the purpose desired, this would be invaluable. How could general interest first be aroused ? He suggested that each museum should allocate a definite fortnight over a term of years for architectural exhibitions. For these, every possible use should be made of the local prestige of local architects, and of the special interests of the locality. As regards cost, Birmingham was always prepared to pay insurance and transport.

The next speaker, Mr. T. Shepherd, of Hull, who, in his own words, was " a very old friend of the Institute," said that he had had several R.I.B.A. exhibitions, all of which he could pronounce to be excellent, and that he was prepared to give this scheme his whole-hearted support, being very fortunate in having the largest gallery space in England.

Mr. J. N. Duddington (Whitechapel) then spoke of the interest which his public took in architectural exhibitions, and he was followed by Mr. Kenneth Holmes, who, as Principal of the Leicester College of Arts and Crafts, said that he had a very personal and particular interest in this scheme, which he considered an educational service of great value to the community. Being in a position to hang an exhibition of twice the size of the Exhibition of International Architecture, and having the support of the local Society of Architects, as well as the local Chamber of Trade, no development could be too rapid from his point of view.

The Croydon Librarian, Mr. W. C. Berwick Sayers, said that in representing the profession of librarian as distinct from the museum director or art gallery curator, he was very glad to have the opportunity of making the acquaintance of the architect, and would be delighted to have the opportunity of staging a small exhibition arranged by the Institute. Living in a town which had some connection with aerodromes, he felt that this particular exhibition would be of great interest. In addition, he would like the committee to carry out Mr. Kaines Smith's suggestion as soon as possible, so that they could have an exhibition which would shame those who wanted to build an inferior construction.

Dr. John Rothenstein, who came from Sheffield, a town which had just turned down the proposition of having an airport, said that he could not understand such an attitude and would gladly take back the Aerodromes Exhibition under his arm. He was followed by Mr. D. W. M. Wright, of Bath, who said that he was very glad to know that the Institute would be able to supply his needs for the Bath Festival.

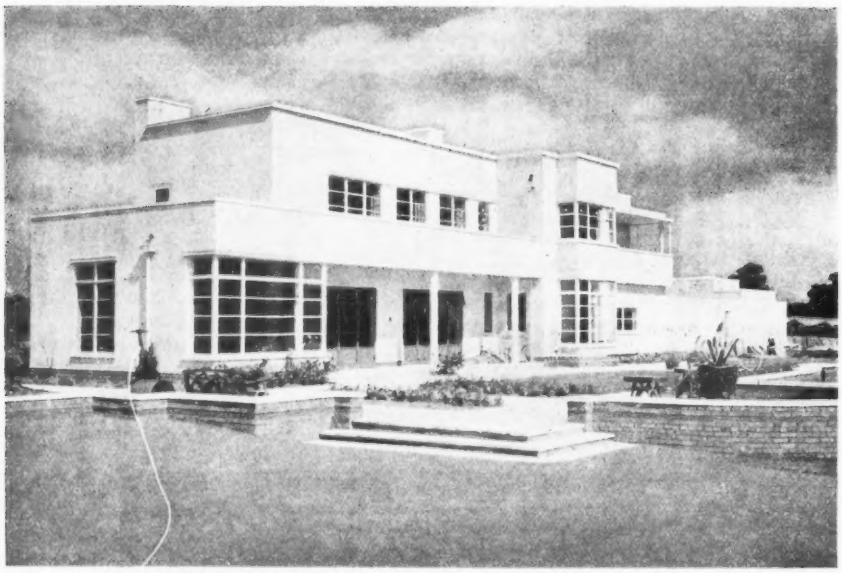
Mr. C. V. Bemrose (Stoke-on-Trent) said that on behalf of the smaller galleries he could already bear out what had been said, and was glad to know that the Institute was now arranging for modifications which would enable the needs of the smaller galleries to be met.

Mr. A. H. Lee (Cardiff) suggested that the Institute should follow up this discussion by sending out a questionnaire to all provincial galleries.

Mr. Charlton Deas, of Sunderland, then suggested that museums and art galleries interested should contribute towards the cost of having the photographs framed, and would like to suggest that the R.I.B.A. be represented at the Museums and Art Galleries Conference, which would take place in Leeds next July ; while Miss Frost, of Eastbourne, refuted the idea that museums to-day were not go-ahead.

Mr. Reeves-Fowkes, of Eastbourne, said that the Institute should use its power to ensure the maximum amount of co-operation between museums and the local educational authorities, while Mr. W. C. Sprunt said that in order to meet the demand the Institute would have to consider the duplication of the material available, and Mr. E. W. Wignall, secretary of the Museums Association, closed the discussion by saying that the interest of museum curators was everywhere evident, and that the question of machinery could be decided later.

There was little doubt that the visitors were unanimously in favour of the scheme and willing to do their best to make use of it and further it.



The loggia and living room window on the south-east side

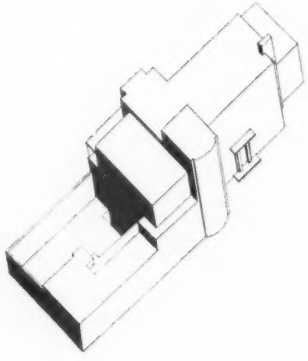
HOUSE AT PERTON, STAFFS

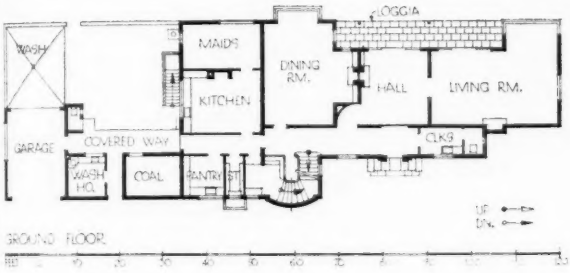
Architects: Lavender & Twentyman [F. & A.]

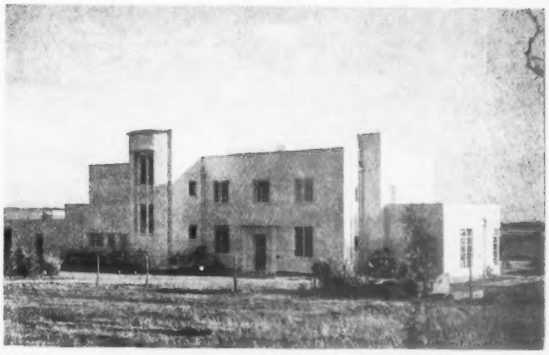
The principal rooms of this house have been strung out to take advantage of a magnificent view to the south. Requirements of the owner were that the flat main roof should be of easy access and that the principal bedroom should have a sleeping balcony. It will be seen that the living rooms all have access to the loggia which is level with a terrace and that there is a roof terrace reached from the principal bedrooms at first floor level. Other requirements of the client were that the living room and dining room should have bay windows and that there should be a recessed fireplace in the dining room.

The structure is of brick, the main walls in 9-inch, finished with white cement rendering. The loggia roof and posts and the sleeping balcony are of reinforced concrete; other roofs and floors are of wood. The roof terraces are surfaced with concrete slabs on bituminous sheeting. Copings and cills are of cast stone and the windows are of steel.

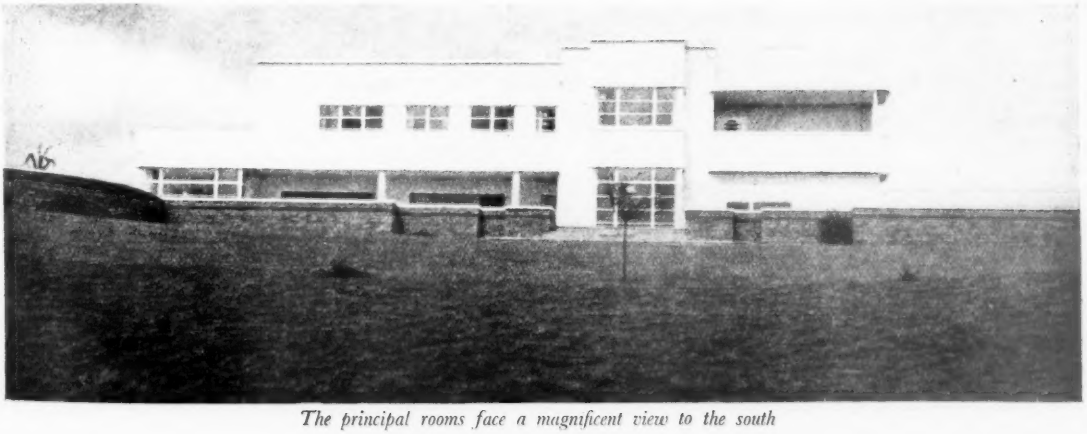
The general contractor was Mr. A. R. Sharratt, of Wolverhampton.







The entrance front on the north side showing the staircase carried up to give easy access to the flat roof. The walls are white cement on brickwork



The principal rooms face a magnificent view to the south

REVIEW OF CONSTRUCTION AND MATERIALS

This series is compiled from all sources contributing technical information of use to architects. These sources are principally the many research bodies, both official and industrial, individual experts and the R.I.B.A. Science Standing Committee. Every effort is made to ensure that the information given shall be as accurate and authoritative as possible.

Questions are invited from readers on matters covered by this section; they should be addressed to the Technical Editor.

The following are addresses and telephone numbers which are likely to be of use to those members seeking technical information. There are many other bodies dealing with specialised branches of research whose addresses can be obtained from the Technical Editor. We would remind readers that these bodies exist for the service of Architects and the Building Industry and are always pleased to answer enquiries.

The Director, The Building Research Station, Garston, Nr. Watford, Herts. Telegrams: "Research Phone Watford." Office hours, 9.30 to 5.30. Saturdays 9 to 12.30.

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks. Telephone: Princes Risborough 101. Telegrams: "Timberlab Princes Risborough." Office hours, 9.15 to 5.30. Saturdays 9.15 to 12.

The Director, The British Standards Institution, 28 Victoria Street, London, S.W.1. Telephone: Victoria 3127 and 3128. Telegrams: "Standards Sowest London." Office hours, 9.30 to 5. Saturdays 9.30 to 12.30.

The Technical Manager, The Building Centre Ltd., 158 New Bond Street, London, W.1. Telephone: Regent 2701, 2705. Office hours, 10 to 6. Saturdays 10 to 1.

BUILDING RESEARCH

Every day the work of the Building Research Station gets more and more important for the individual architect. Often he is quite unaware of the extent of the influence on his practice which the work of the Station exerts. New methods of using materials which come to him from various sources of information quite usually originate at the Station, and in any case have almost always been vetted there. No one but the Board and the staff know of the great amount of confidential work undertaken for manufacturers, the results of which give greater uniformity and better qualities in the materials used by architects to whom the Building Research Station may be little more than a name.

This confidential work is naturally not detailed in the annual reports, of which one—that for 1934*—is here under review. The report is not exciting reading. It might be if one could tell the full tale; for example, one might say "So-and-So's have made much-needed revisions in their production methods as a result of their B.R.S. confidential report," or, again, "Somebody's much-advertised products are pretty poor stuff; he asked B.R.S. and they told him so." So it is not surprising, though regrettable, that many architects are not aware of the great and growing influence which the Station is having on their own methods of practice.

One can do little more with a Building Research Annual Report than wade through a lot of scientific information—much of it of an interim nature—and snatch the occasional hard fact which has emerged, remembering that the Station cannot always tell the full story of its achievements. Below we give a few such gleanings.

*D.S.I.R. Report of the Building Research Board, 1934. H.M. Stationery Office. 3s. 6d.

PORTLAND STONE

In the section on weathering of materials it is made very clear that it is quite unsafe to choose Portland stone by eye, even the most expert eye. Also it is equally unsafe to specify a quarry or bed. At Portland recently a system of sampling and testing, devised by the Station, was put into operation. This really does allow the quarry owners to state fairly definitely what stone is suitable for exterior exposure and what for interior work. Specification by the architect of this or that bed or quarry is only a hindrance in that it restricts the range from which selection can be made and does not tell the owners what they want to know, namely, under what conditions the stone is to be used, e.g., for exterior ashlar, for cornices, for carved work and sculpture or for interior use. The obvious course is to tell the quarry owners what you want the stone for and leave selection to them. That they have set up this troublesome system of sampling under B.R.S. control is a sufficient guarantee of good faith on their part. The report of the Station says:—

> "Meanwhile it would be an advance if architects were to specify stone from beds that have been sampled and proved by test to be of sound quality, instead of Portland stone from a particular quarry, which may no longer be able to produce stone of the character on which its reputation has been founded.
>
> "It would also assist the quarry owners to raise the average quality of the stone supplied if architects were to abandon the common practice of demanding Portland stone 'with a minimum of shell' or 'free from shell.' This practice unnecessarily restricts the choice of stone and excludes much material of the best weathering quality. When stone is required for carving, ease of working is often

considered as being of predominant importance. The demand for non-shelly stone is then carried to such an extreme that soft stone of very inferior quality may be chosen. Thus the most prominent and most expensive masonry features may suffer the most rapid decay."

STONE DECAY AND PRESERVATION

A great deal of investigation work on the decay of stone used in masonry has been done. It still remains, however, to fix the relative responsibilities of atmospheric sulphur gases and of sulphate deposits. A special panel was also constituted to find out whether bacteria in stone influenced decay one way or the other. The finding has been that there is no evidence that they play any prominent part. The Station has also collected foreign scientific reports on the action of stone preservatives to supplement their own conclusions. The latter are confirmed—namely, that no preservative solution has as yet been found which has any influence on masonry for a longer period than two years and that many have an even shorter life. The concluding paragraph of this section of the report says : " It cannot be too strongly emphasised that observations of the effects of stone preservative treatments on decaying buildings need to be interpreted with the utmost caution, and that, whatever claims may be made regarding the efficacy of such treatments, stone of sound quality needs no preservative."

ASPHALT

During the year a scheme of co-operative research was arranged with the National Asphalt Mine-owners' and Manufacturers' Council. This represents a serious attempt to establish asphalt technique on a sound basis. An experimental flat roof has been built and covered with panels of seven different kinds of asphalt. At the same time slabs of the same varieties were prepared for submission to an artificial weathering process in the laboratory.

Preliminary investigations were made into the temperatures on the experimental roof. Four main conclusions were drawn from these : (1) That temperatures beneath the various types of asphalt did not vary appreciably, although the materials varied in surface colour. (2) That asphalt laid over hollow tile becomes slightly hotter than over solid concrete, presumably because of the greater thermal conductivity of the latter. (3) That the presence of a main supporting steel girder did not affect the temperature of the asphalt in its neighbourhood. (4) That the relatively high rate of heat absorption of a blackish asphalt is about balanced by the resistance of the material in normal thickness ($\frac{3}{4}$ inch). A further series of experiments were aimed at finding out how much the bleaching of asphalt under exposure to weathering would affect its heat-absorbing properties. It was found that a specimen exposed for six years had about 10 per cent. less absorbing power than the same material when new.

CEMENT AND CONCRETE

An important part of the report deals with various work on cements and concrete, much of it pure science and quite incomprehensible to laymen. Some of it, however, deals with structural science and is therefore rather more, but not much, within the range of the architect. The small movements that take place in reinforced concrete structures are the subject of a long term study which, when concluded, ought to tell us what sort of life is to be expected in reinforced concrete, about which existing knowledge is hazy. The tests regarding " creep " of concrete in members under load appear to show that it is not likely to be serious at normal working loads but that with excessive loading a serious redistribution of moments throughout the structural system is likely to occur as a result of " creep."

LIMES AND PLASTERS

The work of clearing up the prevailing confusion regarding lime has reached an important stage in that a draft British Standard Specification for Building Limes has been circulated to interested bodies for criticism. Also, a three years' scheme of co-operative research on greystone limes has now been completed and the results communicated to the Greystone Lime Burners' Association. This work has covered a wide field, including a survey of other limes, investigation into such matters as maturing of the material, the influence of clay and loam content (found to have no influence on strength in proportions less than 10 per cent. and to improve workability), the problem of early decoration of plastered surfaces, the influence on workability of the type of sand used, and the desirability of gauging with other materials. Further work on calcium sulphate plasters has also been carried out and the British Standards Institution has circulated a draft specification. The report again emphasises that plaster manufacturers should state definitely to what class their products belong and how they should be used. To that we might add a statement of their qualities so that architects can guard against troubles (e.g., corrosion of metals imbedded in some plasters) and consequently use such materials in their most suitable circumstances.

MORTARS

Now that cement-lime mortars are coming into greater use a series of tests to determine the desirable proportions of mix should prove useful. A series of brick piers was built with the same make of bricks with mortars varying from 1 : 1 to 1 : 3, the cementitious material ranging from hydrated lime alone to Portland cement alone with five intermediate combinations of different proportions. The conclusions are interesting and indicate that the existing practice of using strong cement mortars is wasteful and even harmful. First, there is no advantage from the point of view of strength to be gained by using a mixture richer than 1 : 3 and, in fact, lower results are to be expected. Second, that with a 1 : 3 mix a proportion of lime up to 50-60 per cent. can be substituted for cement without causing any appreciable loss of strength in the pier. Thirdly, that there is little increase in pier strength when mortar having a crushing strength higher than 1,000 lbs. per sq. inch is used. All this really means that a mortar of one part cement, one part hydrated lime, and six parts sand will give an approximate maximum of strength in brickwork. The tests were made with 9-inch by 9-inch piers and it is possible that a different size or shape of structure, or the use of another make of brick might give different results.

BRICKS

The results obtained from the 1932 brick " cemetery " are analysed. Readers will remember that this consists of burying bricks on end, half the brick being underground. The test is naturally a severe one as rain and frost can do their worst on all the exposed faces at once. During two winters the 1932 " cemetery " was exposed to ground frosts on 200 nights. The most striking result was that the highest grades

of brick resisted this severe test excellently, whereas underfired bricks or those of poor manufacture decayed badly after as few as 20 frosts. The results may be summarised as follows :—(1) Hand-made bricks (London stock, Leicestershire red sand stock, Yorkshire sand-moulded facing) all resisted extremely well. (2) Wire-cut bricks (a rusticated brick, a common gault, a Leicestershire red and an engineering brick from the south of England). The rusticated brick laminated badly, the gault decayed seriously, the others resisted well. (3) Stiff-plastic pressed bricks (a Lancashire red, a Staffordshire common fireclay brick, an irregularly fired red brick). The first two resisted well, except a few that were underfired ; the last crumbled to powder. (4) Dry and semi-dry pressed bricks (a red facing brick made by the dry dust process, three bricks from the Oxford clay). The first was unaffected, the others were only moderately resistant and one failed badly.

It should be noted, however, that some of the bricks tested are sold as common bricks for backings and interior work above dampcourse. For this work some that failed badly under the test may be quite suitable. There are, however, some bricks sold as facings which should not be so used. It can be said that any brick which passes this test will easily withstand the worst conditions in a building. Correlation of laboratory tests with the " cemetery," using the same bricks, proves that strengths bear no relation to weathering qualities.

MAGNESITE FLOORS

The report says : " It has been apparent for some time that magnesite floors have been gaining a bad reputation among users. It cannot be contested that many of the complaints made have been well founded, for defective floors of this type have given trouble in many parts of the country. There is no doubt, however, as shown in a number of cases investigated by the Station, that the troubles are not inherent in the material, but for the most part they are due either to bad workmanship on the part of firms laying floors with insufficiently skilled labour at unduly low prices, or to failure on the part of those responsible for specifying the material to appreciate its nature and particular requirements."

These categorical statements and the situation which they reveal are a direct result of the practice of accepting the lowest tender without question. There are several firms who have laid sound magnesium-oxychloride floors for upwards of 20 years. But the material lends itself in a peculiar degree to price-cutting ; the percentage of the expensive binding material can be reduced ; cheap and inexperienced labour can be employed. The result is that firms have sprung up who have been able to undercut the reliable ones and the whole trade has been endangered because of these nefarious practices. Indeed, we have frequently heard architects say that they will not use these floors on any account.

It now looks as though all this will soon be a thing of the past. Early in 1934 the leading manufacturers were invited to a conference at the Station and as a result a code or schedule of recommendations for these floors has been drawn up. They are in three parts : (1) Foundations, sub-floors and backgrounds. (2) Specification of materials. (3) Methods of mixing, laying and finishing.

We understand these recommendations are to be published shortly. The architect will then have to see that part (1) is included in his specification for the general contractor and to specify that tenders from sub-contracting floor firms are in accordance with parts (2) and (3). Acceptance of these terms will afford a guarantee by the sub-contractor of quality and materials. This is a valuable piece of work and the Station and manufacturers are to be congratulated on it.

SHORT NOTES

We have so far selected a few of the major items. The following notes are a condensation of others ; their brevity by no means represents the amount of work connected with them.

Piling.—Some remarkably interesting tests were made to discover the stresses set up in reinforced concrete piles by the blows of the driving hammer. The apparatus for this was elaborate and highly ingenious.

Vibration in Buildings.—This work, which was discontinued, has been started again. It is very complicated as so many factors are involved. There appears to be a possibility with isolated masonry piers and walls that high compressive stresses and consequent cracking may be set up and that lime mortar will disintegrate. Vibration of machinery in buildings is likely to be intolerable to the inhabitants before floors become dangerous.

Wind Pressures.—These have been investigated on models in a wind tunnel. The results appear likely to alter completely existing allowances for wind pressures on structures.

New Heating Laboratory.—The report notes the building of a new laboratory known as " the controlled-weather house." This has been built with the co-operation of the Institution of Heating and Ventilating Engineers and is now completed. It is in essence a house, or rather a typical room, enclosed in a highly insulated casing of which each side is equipped with freezing and heating panels. It will thus be possible to reproduce any temperature conditions at any time of the year. For example, two walls can be brought below freezing point, the other four sides being at normal temperatures, thus representing conditions in a corner room in a block of buildings. The purpose of this laboratory is to determine the exact efficiencies of all forms of heating in a room under all conditions of exposure. These are registered by a eupatheostat which records the " comfort conditions " of a human being.

Factory Heating.—An experiment was made to determine whether the common method of heating factories by high-level pipes could not be improved. This method often gives severe cold down-draughts, specially when the roof is a poor insulator. It was found that enclosing the pipe in a wide inverted wooden trough noticeably reduced the down draught and gave a 30 per cent. economy in heating.

Collection of Dew for Water Supply.—The recent droughts led the Station to investigate the possibility of constructing roofs on the now well-understood principle of the dew-pond as a means of supplementing water supply. The results were disappointing ; the dew-pond roof in one night collected one quart of water only, which (as the report says) compares very unfavourably with the 100 gallons given by one inch of rain on the same roof.

Air-conditioning for Museum Cases.—The Station has evolved a simple apparatus for regulating humidity in museum cases containing valuable articles liable to decay through atmospheric changes. This is covered by a patent and licences to use it can be obtained at a nominal charge.

Book Reviews

THE WREN SOCIETY'S TWELFTH VOLUME *

The vitality of the historical materials being made available in the publications of the Wren Society is shown by the discussions, amounting sometimes almost to controversy, aroused by each volume as it appears. The present instalment is fuller than ever of this sort of interest and of other attractive features as well. It consists in the main of the outlying drawings, unconnected with Sir Christopher's better-known works, and even in some cases demonstrably the productions of men of the generation following his, which became incorporated at an early period in the great collections of Wren materials, notably that at All Souls College. The facts about the formation of this and others of the same class remain obscure, but nothing is more likely to clear them up than the publication of everything of any importance that they include. The Editors have done wisely to undertake this before returning to the remaining drawings for St. Paul's, and the full discussion of them all, including those reproduced in the two first volumes.

Incidentally, as it were, the present volume assumes particular importance in two directions: firstly, as a contribution to the unfamiliar history of that curious problem the virtual escape or side-tracking of English architecture from the main current of Baroque and Rococo taste; and secondly, as a series of typical illustrations of the styles of architectural drawing in use in this country, from early sketches by Wren himself, essentially akin to those of Webb, Inigo Jones and even Thorpe, down to examples in the fully developed academic manner imported from Italy by the Palladian-Burlington school and Gibbs.

The difficulty of seeing round the obstructing form of "John Company," clad in his panoply of impeccably businesslike records, is a familiar complaint with impartial historians of British India; and students of English architecture in the eighteenth century are opposed by a kindred eclipsing shadow in the Burlington "Vitruvius Britannicus" school, with its somewhat disingenuous political tactics. Neither is the extent of Baroque influence in England easy to estimate, even from existing monuments; for nobody knows, or probably ever will know, how far the interior details of Blenheim, and possibly some exterior ones, were manipulated later by Sir William Chambers; and the Venetian decorator who was let loose on the great hall at Castle Howard fairly extinguished the architecture. So that, short of first-hand knowledge of the most original English Baroque genius, we are left with the relatively pedestrian Gibbs. His two conspicuous London churches and the Radcliffe Camera remain.

He plays what is in many ways the leading part in the present volume. Mr. Bolton produces some illuminating suggestions about Gibbs's early career and his student days in Rome, and illustrates several remarkable plans and elevations for a vast mansion intended for the Duke of Newcastle (Plates XXXVI to XL), affording much scope for conjecture and discussion. But perhaps the most exciting design reproduced is one for a bell-tower (Plate XXXII). At first blush the very nationality of this seems disputable, but cumulative points of evidence ingeniously marshalled by Mr. Bolton go far towards proving that it must be English and the work of the Aberdonian architect. It is necessary to bear in mind that when it was produced the great age of campanile building in Italy was over. Amongst Italian towers only those of the Carmine at Naples, the Santuario at Loreto, and a few others stand out as being so late in date. Even north of the Alps the belfries of the University Church at Würzburg and the Catholic Hofkirche at Dresden (very close to Gibbs, but in a different phase) are rare examples. By this time all over the Continent, as in Rome, the focus of attraction in design had become transferred to the cupola. It was only in England that steeple design survived as an acutely interesting problem. In fact, critics have been found ready to maintain that Wren's steeples were his most original and important contributions to architecture—and ecclesiastics, in a hurry to do away with the annexed churches, to assert that they were his only one.

Amongst miscellaneous items of interest illustrated are Wren's original sketches for re-planning London after the Fire, his frequently discussed theatre designs, and a number of studies for ornamental details inspired with intimate charm and freshness which are most attractive. Possibly the most delightful is a design for a canopy with the crown and cypher of Mary II, intended, the Editors suggest, for a bed, but it would seem with more likelihood for the Royal barge or some occasion of State pageantry.

The Society pleads again, and with increasing cogency, for wider support. What it has already accomplished is astonishing, and could only have been achieved with the generous help of public bodies and individual benefactors inspired by the self-effacing labours of the Editors. It is not uncommon to meet with people who excuse themselves from joining a society whose work is in progress, on the grounds that serial issues are apt to have no end, that it is impossible to recapture their beginnings, and odd volumes are meaningless. So it may be permitted to point out that the Wren Society set forth with a definite plan of operations covering a stated period of years. Its publications amount, in fact, to a single work published in instal-

* *The Twelfth Volume of the Wren Society, 1935.* Issued only to subscribers.

ments. The final result will be a series of magnificent monographs illustrative of the monuments and documents of a most important epoch in the history of architecture ; an undertaking such as can never be repeated, and the value of which must appreciate more and more with the lapse of time.

SUMERIAN ART*

Comparison with Sir Leonard Woolley's previous publications reveals one aspect of his history of the development of Sumerian Art which calls for comment on account of its novelty. The author, in describing the historical development of the Sumerian civilisation and the discovery of its works of art, has attempted the difficult task of assessing the artistic contribution from an æsthetic viewpoint.

Ancient works of art are usually treated not as objects of æsthetic enjoyment so much as " deposits of human imagination," and the widespread interest in archæological remains is often assumed to be an interest in the historical process and its expression in works of art rather than in the works of art themselves. Perhaps for this reason the artistic importance of Sumeria has been comparatively neglected ; and yet for every one person competent to assess the value of a stone statue in its historical sequence there must be many who are prepared to appraise it as beautiful or to condemn it as ugly, and it may be that its ultimate value lies in its æsthetic merit.

The plastic arts have at different times and in different races expressed so many various conceptions and have used such various means of expression that in approaching a critical appreciation each epoch calls for its own particular æsthetic. In primitive art especially, where the origins of art forms are under consideration, the connection between sculpture and language and the possible evolution of sculptural forms from pictographs should be borne in mind. This is said because, in looking at the works of art of a remote civilisation like that of the Sumerians, it would appear that the artist appropriated forms which originated as intellectual concepts not related at all closely to vision or reality. The desire for expression seems to have been satisfied by the use of these concepts over a long period of development, and only very gradually took on the likeness of appearance. The artist seems not to have sought to capture a visual sensation but to express a mental image which was largely influenced by his conceptual outlook and habits.

This approach is obviously far removed from the method of the modern artist, who has a long history of realism behind him, and who, if he expresses himself conceptually, does so self-consciously and imposes his own limitations. It is perhaps needful to wonder how far contemporary appreciation can be trusted to interpret the feelings of the primitive artist with his so different approach ; it is easy to read into a work of art an intention which was not really present and to be content to rationalise one's personal likes and dislikes.

Where the author has attempted æsthetic comment he does not seem to have seen the need for such a caution ; he has indeed assumed the existence of artists possessing an almost modern æsthetic and working with a self-conscious technique under self-imposed limitations. He assumes a working knowledge of the artist's mental approach.

Referring to one of the Ur Royal Cemetery bulls, he writes :

" Very few people, looking at it, have noticed the absurdity of a bull having a beard, and a blue beard at that ; the only impression they have got is that of strength and dignity—precisely the impression which the artist wanted to convey." (p. 76.)

Similarly he writes : " Sumerian taste did not approve of gold and silver in juxtaposition." (p. 77.)

Discussing the Tal Asmar statues, he writes :

" It is a school of portraiture, uncertain of its means, vigorous and impatient of tradition, attempting with a hit-or-miss audacity a realism which their masters rejected as inartistic." (p. 61.)

He champions the artist against the restrictions of religious convention, and excuses him for being forced against his better judgment to produce work which the author considers in poor taste :

" The detail of the work is excellent, but as a composition the whole is deplorable ; the contours of the vase are disguised by the excrescences of the ornament, its severe outline outraged by the floridness of the applied design, there is no unity, and even the mechanical balance of the piece is destroyed. Judging from the fact that several vases of the same pattern were found, we may judge that it was a convention—a case of religious symbolism being forced on the artist without regard to his own likes or dislikes ; certainly it has nothing in common with the technical skill displayed in its execution." (p. 58.)

The vase in question is an exceptionally bold piece of high relief modelling, and the reader will be able to judge from the photograph whether this apology is entirely necessary.

**The Development of Sumerian Art*, by C. Leonard Woolley. London, Faber & Faber, 1935. 30s.*

One other quotation must suffice, and will, with the foregoing extracts, indicate the author's method :

"Two small heads stand out from the general run of Sumerian sculpture as illustrating the conscious striving after beauty for its own sake, which is characteristic of Greek rather than of Near Eastern art—conscious striving because the beauty is no mere accident of line, but innate in the conception of the artist . . . it is an idealistic art, working within limitations cheerfully accepted and utilised to express the essence rather than the outward accidents of things." (p. 110.)

It is perhaps not unfair to suggest that such a subjective approach does not increase one's knowledge or sympathy for Sumerian art. The issue has been oversimplified in an almost nervous attempt to justify the artistic efforts of the Sumerian craftsman, and the difficulties have not been fairly met, possibly because of a lack of awareness of the problem.

It would be uncharitable, however, to lay undue stress on the author's art criticism. It is only because there is so urgent a need for a rational, intelligent æsthetic appreciation of Sumerian art that emphasis has been given to this aspect of the book. In view of this need, the book is timely. Its failure to meet the need will perhaps encourage the expert critic to take up the cause. Indeed, the author, in a prefatory note, invites the critic's " more considered judgment," and he disarms criticism by stating that his intention has not been a critical appreciation of Sumerian art so much as a description of its sources and development " as influenced by the accidents of history."

The archæologist is in a sense too close to his subject to be the best judge of æsthetic value. An object won from the soil, restored under difficulties and yielding after hours of labour a beauty which is often no more than a beauty of texture—such an object is doubly valuable to the discoverer and difficult to regard without bias. For this reason, too, predominant place has been given naturally to objects discovered personally by the author, and there is also a pardonable bias shown in favour of the city of his labours. It would be necessary to scrutinise the publications of the American, French and German expeditions to correct this bias completely and to obtain a comprehensive and impartial picture of the Sumerian civilisation.

It is impossible not to compare the book with the French publication, " L'Art de la Mesopotamie," by Christian Zervos, in which the museum objects have been rephotographed to display their merits as works of art, and have been published full page, with an almost complete absence of letterpress. It must be said that this method presents a better case for Sumerian art than in the book under review, in which many of the photographs are poor by comparison and small, and can act only as reminders of what has been seen already in museums. If the author's object has been to enlarge his sympathetic public to the undoubted merits of Sumerian art, larger and better photographs and less letterpress might have served his purpose better.

The most interesting portion of the book is perhaps the brief account of the development of architectural forms in the country. It is well to remind ourselves that the author has, by his discoveries, entirely rewritten the opening chapters of architectural history. The basic forms of building, the vault, the dome, the arch and the column, are shown to have been in constant use throughout the whole history of Sumer, and extended far back into the period of the Royal Tombs, which he dates at 3500 B.C. The development in the construction of the arch is shown in a series of photographs, beginning with the corbel vault and ending with the fully developed voussoired arch with keystone. Pendentives were used as early as the period of the Royal Tombs, and from these early beginnings architectural building developed until in the third dynasty of Ur, 2300 B.C., the Ziggurat, a brick platform still standing seventy feet above ground, displays subtleties of optical correction which we have been accustomed to attribute to the Greeks alone.

The use of clay cones dipped in colour and pressed into the soft plaster of walls and columns to form a mosaic was one of the earliest forms of decoration, and achieved a surprisingly rich effect. This same technique was used on a larger scale in the decoration of the archaic mud brick ziggurats, where instead of the small pencil-like cones large hollow cones of pottery were used and the effect obtained by the deep shadows these produced. The author is at his best when describing archæological discoveries, and in the twelve years of excavation at Ur of the Chaldees he has built up a huge volume of information and knowledge of the Sumerian civilisation.

The book is competently published by Messrs. Faber and Faber.

J. C. R.

CHINESE ART

INTRODUCTION TO CHINESE ART, *by Arnold Silcock. Oxford University Press. London, Milford. 1935. 6s.*

This charming volume could have been published at no more opportune time. It will be most useful to all those who visit the marvellous collection of Chinese treasures now being exhibited at Burlington House.

I who have lived in China for a number of years, and, as a consequence, know the Oriental mind realise what great difficulties confronted Mr. Silcock in his research work. The Chinese language, with many hundreds of dialects, which vary even within the radius of a few li, is by no means easy to learn ; therefore one has to memorise the Chinese characters or ideographs, which are but symbols of thoughts interpreted in the numerous dialects.

The first page plunges the reader into that poetic mystery which makes one who has lived there long to get back to fair Cathay. It goes on further to explain the various symbols used in the very earliest days, 3000 years B.C.

In the second chapter he deals with the dawn of history, dating from approximately 3000 to 1122 B.C. Then follows a chapter on the Chou and Ch'in Dynasties admirably illustrated by a plate (II) of a bronze wine vessel in the form of an owl or parrot ; and so throughout the book Mr. Silcock gradually takes us up through to the Ch'ing Dynasty which was the period from A.D. 1644 to 1912, the latter date being the year of the Revolution in China.

The Chinese are still perfect craftsmen, and to this day adhere to their ancestral method of production. Their long tapered fingers seem to have been specially given them to master the intricacies of the minute details of their work, such as the carving of ivories, modelling and casting of bronzes and brasses, weaving silks of fine texture, embroidery in vivid colours, also the rich carpetings from the hand loom. Their very handwriting is painted with a brush held vertically.

The appendixes at the end of the book are most valuable, particularly Appendix III, which deals with history, and where are shown, in tabulated form, the China dynasty and ruler of the times ; memorable men and events ; principal artists ; monuments and art developments. The value is

considerably enhanced by parallels drawn between Occidental and Chinese history of similar period.

The book is handsomely illustrated with photographs and drawings by the author of vessels and animals of the Stone Age, bronzes, jade figures, pottery, etc., of the various dynasties.

Mr. Silcock is to be congratulated on his wonderful achievement, which is a Thesaurus of valuable data on the sublime art and craft of this ancient and meticulously precise race. I find his style eminently suits the poetic atmosphere of his subject, and I am astonished at the enormous amount of erudition contained in such a concise volume (268 pp.).

It would be a thousand pities if this volume is to be the only one from this fluent pen and a book on Chinese life and customs by the same author will be enjoyed by all.

F. A. WALKER [*F.*]

STRUCTURAL PROBLEMS

ELEMENTARY STRUCTURAL PROBLEMS IN STEEL AND TIMBER. *by C. R. Young, B.A.Sc., C.E. 2nd edition. New York: John Wiley & Sons. London: Chapman & Hall. 1935, 20s.*

This book sets out very clearly and instructively examples of the design of the usual component details of a structure. It classifies these components generally as tension members, compression members, beams, girders, etc.

Because of this I think that the title of the book "Elementary Structural Problems," which I infer means the solution of elementary structural problems, is not really true.

By the time an engineer reaches the stage where the detailed design of structural components is to be done, the structural problem has been solved.

On the majority of structures one member cannot be designed separately but must be designed, or its design kept in mind during study of the structural problem, with due consideration for its effect on other members.

Further, during the study of a structural problem there must be a clear recognition of the important differences between load carrying stresses and stresses that produce no appreciable resistance to the load to be carried.

Therefore a book on the solution of structural problems which enables the reader to obtain an economical design by a conception of the structure as a whole is elementary, as opposed to the design of elements of the structure.

An experienced engineer realises that precision is futile in some cases and important in others, and if a detailed analysis of an assumed structural solution indicates a certain member to be overstressed, it may not necessarily indicate that that member should be made larger, it may indicate that the structural layout should be changed. This fact must be borne in mind to a degree even in the design of an element of a structure and I think that this book does not indicate sufficiently clearly the relative efficiencies of alternative solutions, which a book intended to teach should do.

Architects who wish to train themselves in the design of structures may be led astray by the title of the book and begin at the wrong end of the course.

I think the book would be more valuable if it followed this path (*a*) study of normal structural action, that is considering all elements, pinjointed or freely supported, etc., in a purely theoretical manner; (*b*) a study of combined action, i.e., in a structure where more than one element combines in supporting a load, the effect on the others of overstressing one component; (*c*) secondary stresses, that is, for example, the effect on a component assumed pinjointed of a restraining connection, misalignment or a varying cross section. The above are sufficient to indicate the approach, and after a complete realisation of the fundamental considerations of a structural design, then is the time to study this book for the modern design of structural elements.

At present it is an excellent book of reference for experienced designers. The principle used is to state a formula for design and then give numeral examples using that formula. But I feel that, except for engineers who need a reminder only, a bare statement of formulæ is dangerous without an indication of the fundamental theories from which they are evolved.

R. T. JAMES, A.M.Inst.C.E.

BUILDING FOR PEOPLE

THE HOUSE: A MACHINE FOR LIVING IN, *by Anthony Bertram. London: Black, 1935. 5s.*

This is a short book written for the general public, the sort of people who often build or buy by instalments their own homes. Its object is to make them cease to want (or to put up with, whichever it is) the sort of home that so many of them do, and to suggest that it is only by treating the house first as an appliance to satisfy needs, like a motor-car, that a healthy development of house architecture is possible.

Its method is to sketch the way in which English house-building and equipment in the past has developed in accordance with use and the implements that were available at the time. From this there follows a discussion of what the house can be now, with modern needs and modern technical resources. It is perhaps an over-simple view of history that is presented, but the argument is one that should appeal to English love of precedent and is a good weapon against the lingering belief that modern architecture is in some way opposed to tradition and that revivalism is in accordance with tradition.

To say that there is little in the rather elementary subject-matter to interest those who already have to do with the subject is not in the least a criticism. It is a symptom of the level of general opinion that a book dealing largely in truisms and presenting such a simple idea is not only useful but necessary. After nearly two decades of the architectural movement in Europe large sections of the English public are either oblivious of it or misunderstand it. To get the general public interested and informed is to-day probably the most pressing need in architecture in this country. This book is aimed at the right place, and its price encourages a real hope that it will hit it.

It is very easy and readable, a little "bright" in tone ("I find English houses inexhaustibly amusing"; "Little man, what now?" and so on) which one hopes will stimulate rather than irritate. It is illustrated by Mr. A. G. Wise with comparative sketches of rooms and furniture at various times in history including the present.

A. C. H. B.

Review of Periodicals

Attempt is made in this review to refer to the more important articles in all the journals received by the Library. None of the journals mentioned are in the Loan Library, but the Librarian will be pleased to give information about prices and where each journal can be obtained. Members can have photostat copies of particular articles made at their own cost on application to the Librarian.

SCHOOLS AND UNIVERSITIES

BAUMEISTER. *Vol. XXXIII. No. 12. December. P. 414.*
A cheaply built *volksschule* in Elsenz, Baden (Heinz Hansen). Also competition scheme for a *volksschule* at Liep, East Prussia.

INGEGNERE (ROME). *Vol. XIV. No. 22. P. 918.*
Italian school in Egypt. A large modern building including infants, elementary and technical schools with a large lecture theatre, laboratories, etc., etc.

MODERNE BAUFORMEN. *Vol. XXXIV. No. 12. December. P. 633.*
National Socialist training college in an old castle at Erwitte, Westfalen, with a new old-style building added, with offices, dormitories, etc ; some interesting decoration and much good "rustic" furniture.

LABORATORIES

BOUWBEDRIJF (THE HAGUE). *Vol. XII. No. 24. 29 November. P. 253.*
Canal engineering research laboratory, Delft. A large building with special structure and equipment by Professor Wattjes.

BUILDING. *Vol. X. No. 12. December. P. 462.*
Zoological laboratories, Cambridge, by J. Murray Easton [*F.*].

EXHIBITIONS

BOUWKUNDIG WEEKBLAD ARCHITECTURA. *1935. No. 48. 30 November. P. 491.*
The Jubilee Exhibition of Genootschap Architectura et Amicitia in the Stedelijk Museum, Amsterdam. A good example of a small temporary exhibition of photographs, sculpture, furniture, etc.

CASA BELLA (MILAN). *Vol. VIII. No. 94. October. P. 20.*
Pavilion of the Institute Nazionale delle Assicurazione at the last Levant Fair.

LIBRARIES

ARKITEKTEN (HELSINGFORS). *1935. No. 10. P. 145.*
The State Library, Viborg, by Alvar Aalto. One of the most important national libraries recently built in Europe, entirely modern in conception, plan and equipment. An outstanding building which should be studied in detail by every architect interested in library design.

SPORTS BUILDINGS, STADIA AND BATHS

ARCHITETTURA (ROME). *Vol. XIV. No. 11. November. P. 609.*
The Stadium, Lucca (R. Fagnoni, E. Bianchini and Mannozzi). An interesting concrete stadium with covered and open stands, and games courts, etc.

BUILDER. *Vol. CXLIX. No. 4845. 13 December. P. 1061.*
Pier approach public baths, Bournemouth (K. M. B. Cross [*F.*]).

MONATSHEFTE F. BAUKUNST U. STADTEBAU. *Vol. XIX. No. 12. December.*
Gymnasium equipment data and sports ground sizes.

TRANSPORT BUILDINGS

ARCHITETTURA (ROME). *Vol. XIV. No. 11. November. P. 609.*
Venice Railway Station. Competition designs of great interest showing bold and modern solutions of a particularly difficult problem.

INDUSTRIAL BUILDINGS

WERK (ZURICH). *Vol. XXII. No. 12. December. P. 397.*
Small ceramics factory for F. Haussmann, Uster, near Zurich, by Max E. Haefeli. A charming modern timber building, well illustrated and fully described.

BAUGILDE (BERLIN). *Vol. XVII. No. 28. P. 857.*
Sound film studio, Templehof, Berlin (Otto Kohtz).

CASA BELLA (MILAN). *Vol. VIII. No. 94. October. P. 8.*
Copenhagen Abattoir, fully illustrated and described.

CHURCHES

MONATSHEFTE F. BAUKUNST U. STADTEBAU. *Vol. XIX. No. 12. December. P. 401.*
Markuskirche, Karlsruhe, by Otto Bartnting.

DOMESTIC

ARCHITECT AND BUILDING NEWS. *Vol. CXLIV. No. 3495. 13 December. P. 319.*
Le Corbusier's two latest houses, a villa in the Midi and one near Paris. The first is of polygonal stonework and wood, a villa for a family of five ; the planning is direct and personal to the problem. The other is a small house with one large living room and one bedroom, built of concrete, and the roof covered with soil and turf to give back the house site to garden. Each of these jobs deserves close study. They represent excellently the complete detachment of le Corbusier from pre-conceptions and cliché and his willingness to use whatever material he thinks good—old or new.

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Apsley House, Finchley Road, N.W. Description of new method of building a reinforced concrete structure using permant formwork of pre-cast briquette slabs $2\frac{1}{8}$ in. thick. The work is interesting and has possibilities. Architects, Blackbourn & Partners [*F.A.*], Aston Webb & Son [*F.*], and H. A. Dawson [*A.*]. Engineer, Dr. O. Faber [*Hon. A.*]. System of construction invented by Mr. H. G. Dyke.

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Dorset House, Marylebone Road, London (T. P. Bennett and Son [*F.*]). Middle-class flats in four types from £150 to £385 p.a. rent.

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Housing colonies for unemployed. Similar in idea to some recent German housing based on open development plan, with small houses with gardens, the garden produce counting as an economic asset. Plans, photos of models and full description.

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(3) for drainage work in connection with buildings. 1935.
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REVIEW OF PRACTICE

Architectural Competitions

REVISION OF THE R.I.B.A. REGULATIONS GOVERNING THE PROMOTION AND CONDUCT OF ARCHITECTURAL COMPETITIONS

The Council have approved a recommendation of the Practice Standing Committee and Competitions Committee that Clause 9 of the R.I.B.A. Regulations governing the Promotion and Conduct of Architectural Competitions should be amended by the substitution of the word "must" for "should." The clause as amended will read as follows :—

> The Conditions of a Competition issued by a Corporate Body must have the Common Seal of that Body affixed thereto.

This regulation will not be applicable to Scotland and other countries where the law is different from that of England in respect of the "sealing" of contracts.

In accordance with Bye-law 38 the Council give notice that this amendment will be confirmed by them at their meeting on 13 January 1936 subject to consideration of any comments or criticisms which may be received from members. Such comments or criticisms should, in accordance with the above-mentioned Bye-law, be submitted within fourteen days of the date of issue of this Journal.

APPOINTMENTS UNDER SEAL

In order to obtain an authoritative ruling as to the necessity for architects' appointments with corporate bodies and conditions of competitions promoted by local authorities being under "seal" the Practice Standing Committee recently submitted a case to Counsel, Mr. H. I. P. Hallett, for his opinion.

Counsel's opinion is published below for the information of members :—

OPINION

By Section 174 (1) of the Public Health Act 1875 it is provided that "Every Contract made by an urban authority whereof the value or amount exceeds Fifty pounds shall be in writing and sealed with the common seal of such authority," and by a series of decisions commencing with *Hunt* v. *Wimbledon Local Board* (1878) 4 C.P.D. 48, it has been decided that the section is imperative, so as to prevent any claim being made against an urban authority in respect of a contract which has not been executed in accordance with the provisions of the section, and even although the urban authority has received the whole benefit of the contract.

Accordingly the absence of a written and sealed contract has hitherto been regarded as preventing an architect from making any claim against an urban authority where he has been successful in an architectural competition and the urban authority has failed to employ and/or remunerate him in accordance with the published Conditions of Competition.

By section 307 (1) (*a*) of the Local Government Act 1933 the Public Health Act 1875 is repealed to the extent mentioned in the First Part of the Eleventh Schedule to that Act, and the sections so repealed include section 174.

I am instructed that the Royal Institute of British Architects now desire to be advised by me as to what effect this repeal has upon the rights of architects as against local authorities, and more particularly as regards the rights of architects who have been successful in an Architectural Competition.

It is to be observed in the first place that by section 308 (2) of the Local Government Act 1933 that Act is not, except where otherwise expressly provided, to extend to London, which is defined in section 305 as meaning the Administrative County of London.

By section 307 (1) the repeal of the Acts mentioned in that section extends to London as respects the Acts mentioned in the second column of the Fifth Part of the Eleventh Schedule to the extent specified in the third column of that Part of that Schedule, but section 174 of the Public Health Act 1875 does not appear in the Fifth Part of the Eleventh Schedule.

Furthermore, the Local Government Act 1933 does not repeal section 149 of the Metropolis Management Act 1855 which requires (*inter alia*) that every contract under that Act for works or materials, where the value or amount exceeds £10 (not £50) shall be under the corporate seal.

The result clearly seems to be that the Local Government Act 1933 makes no difference as regards the rules governing contracts made by the London County Council or a Metropolitan Borough Council which continue to be those laid down in section 149 of the Metropolis Management Act 1855.

It is certainly anomalous that contracts made by, for instance, the Ealing, Willesden or West Ham Borough Councils should be on a different footing to contracts made by the Hammersmith, Hampstead or Poplar Borough Councils, but this is clearly the position pending further legislation.

In the second place, it is to be observed that the decision in *Nixon* v. *Erith Urban District Council* (1924, 1 K.B. 819) depended primarily upon section 56 of the Housing Act 1890 which is re-enacted in substance by section 57 (3) of the Housing Act 1925. By section 56 of the Housing Act 1890 it was provided that the local authority might for the purpose of carrying it into execution "exercise the same powers whether of contract or otherwise in the execution of their duties as sanitary authorities might exercise under the Public Health Acts" and in *Nixon* v. *Erith U.D.C.* it was held that this had the effect of introducing the limit on the power of an urban authority to contract which is contained in section 174 of the Public Health Act, 1875.

The Housing Act 1925 was passed after the decision in *Nixon* v. *Erith U.D.C.*, and it is certainly a roundabout and unsatisfactory way of overruling that decision merely to include section 174 of the Public Health Act 1875 amongst the sections repealed by the Eleventh Schedule to the Local Government Act 1933. The question is whether the reference in section 57 (3) of the Housing Act 1925 to the powers

exerciseable under the Public Health Acts refers to the powers exerciseable under those Acts at the date of the passing of the 1925 Act, or to such powers as might thereafter from time to time be exerciseable under the Public Health Acts having regard to subsequent repeals and amendments of those Acts. I am disposed to think that the latter view will be adopted by the Courts, but there is a good deal to be said against it and the point cannot be said to be free from doubt.

In the third place, it is to be observed that in some cases there are special statutory provisions which override the requirements of the Common Law and instances will be found in the cases of *Scott* v. *Clifton School Board* (1884), 14 Q.B.D. 500, and *Baker* v. *Holme Cultram Urban Council* (1915), 85 L.J. K.B. 299.

Excluding, however, from consideration

(*a*) the case of an urban authority within the Administrative County of London

and (*b*) the doubt as to whether the effect of section 57 (3) of the Housing Act 1925 has been altered by the repeal of section 174 of the Public Health Act 1875

and (*c*) the case of local authorities to whose activities some other special Statute may apply, I agree that the position as regards all contracts made by local authorities, whether rural or urban, is now governed by the common law as expounded in the cases, and more particularly in the case of *Lawford* v. *Billericay Rural District Council* (1903, 1 K.B. 772).

I do not think that section 266 (2) of the Local Government Act 1933 will affect the position of those who enter into contracts with local authorities. That sub-section enacts that all contracts are to be made in accordance with the Standing Orders of the Local Authority, but it goes on to provide that all contracts entered into by a local authority if otherwise valid shall have full force and effect, notwithstanding that the Standing Orders applicable thereto have not been complied with.

This finally disposes of the harsh rule laid down in *British Insulated Wire Company* v. *Prescot Urban District Council* (1895, 2 Q.B. 463), so far as it survived the case of *Soothill Upper Urban District Council* v. *Wakefield U.D.C.* (1905, 2 Ch. 516), and it would appear that section 266 (2) has no effect upon the rights of persons contracting with local authorities.

I should remark in passing that section 174 has been rather curiously held to entitle urban authorities to make an oral contract, notwithstanding the rule of the common law, provided that the amount in question is less than £50 (see *Eaton* v. *Basker* (1881) 7 Q.B.D. 529) and that this modification of the common law no longer holds good having regard to the repeal of section 174.

At common law a contract of a corporation must be made under seal, but there are five recognised exceptions to this rule.

The first exception is in respect of matters of small importance, frequent recurrence or urgent necessity, but this exception is unlikely to be of much avail in any matter in which architects are concerned.

The second exception is in respect of the contracts of a trading corporation, and has no relevance to the matters now under consideration.

The third exception is laid down in the case of *Lawford* v. *Billericay R.D.C.* above cited, and I proceed to discuss this exception hereafter.

The fourth exception is where the other party to the contract has received the benefit of the consideration moving from the corporation, and this exception does not affect the liability of the Corporation.

The fifth exception is where the equitable doctrine of part-performance is applicable.

There is still considerable doubt as to whether the equitable doctrine of part-performance is confined to cases concerning land (compare *Britain* v. *Rossiter* (1879) 11 Q.B.D. 123, with *McManus* v. *Cooke* (1887) 35 C.D. 681 at 697), but at any rate it is plain that the doctrine only applies to cases in which a Court of Equity would entertain a suit for specific performance, if the alleged contract had been in writing, and it is well settled that a suit for specific performance will never be entertained in respect of a contract of personal service.

Accordingly I do not think that the fifth exception can ever avail an architect when seeking to enforce a contract to employ and/or remunerate him which has been entered into by a local authority without the formality of a Seal.

The result is that the only exception to the common law rule which is likely to avail in the circumstances now under consideration is the exception established by the case of *Lawford* v. *Billericay R.D.C.*

In my opinion that case did *not* establish that where work has been done or services rendered in pursuance of an original contract made with the local authority, but not authenticated with the Seal of the Local Authority, such original contract becomes enforceable by reason of the acceptance by the local authority of the benefit of such work or services.

It merely established, in my opinion, that a new contract to pay a reasonable sum for the work done or the services rendered is to be implied from the acts of the local authority in accepting that work or those services. The price or remuneration which is obtainable is a *quantum meruit* and not necessarily the price or remuneration agreed in the original contract, although the agreement of the parties as recorded in the original contract will provide cogent evidence of what is a reasonable price or remuneration to award.

I think that this interpretation of the Judgments in *Lawford* v. *Billericay R.D.C.* is confirmed by the Judgments in *Hoare* v. *Kingsbury Urban District Council* (1912, 2 Ch. at 464) and in *Douglass* v. *Rhyl U.D.C.* (1913, 2 Ch. 407).

If, therefore, an architect has actually carried out professional work on the instructions of the local authority or its duly authorised agents, and such work is necessary for the purposes for which the local authority exists, I think that the architect is now entitled to recover a reasonable remuneration for such professional work notwithstanding that his employment has not been by means of a contract made under the Seal of the Local Authority.

If, on the other hand, there is a purely executory contract between a local authority and an architect I am of opinion that it is not binding on the local authority if it is not authenticated by the Seal of the Local Authority.

In cases where a local authority has invited architects to enter into an architectural competition and by the terms of its invitation has promised to remunerate and/or employ those competitors who have been selected by the assessor I think that, upon the principle laid down in such cases as *Carlill* v. *Carbolic Smoke Company* (1893, 1 Q.B. 256), a contract may be constituted by the acceptance on the part of the competitors of the offer made generally by the local authority, but I doubt very much whether such contract is ever enforceable unless the offer has been made in writing and under the Seal of the Local Authority.

The contract to employ the successful competitor for the purpose of carrying out the work is obviously purely executory, and unless and until the architect in fact renders the services

necessary for the purpose of carrying out the work it seems to me to be plain that he cannot satisfy the conditions which are necessary to entitle him to recover his fees upon the principle laid down in *Lawford* v. *Billericay R.D.C.*

I am wholly unable to imply a contract to employ and/or remunerate him from the mere receipt by the local authority of the plans which he has submitted as a competitor in the architectural competition.

If, apart from a competition, a local authority were to invite an architect to prepare and submit plans for certain work which the local authority is minded to undertake, and such plans were necessary for the purposes for which the local authority exists, I think that the local authority by taking the plans might give rise to an implied contract to pay a reasonable remuneration for the work of preparing them, but in the case of a competition it is obvious that the unsuccessful competitors will receive no remuneration whatever for their work in preparing their plans and it follows that in my opinion no contract to remunerate each competitor for his work in preparing his plans can be implied.

The contract to remunerate the competitors selected by the assessor is to be found only in the Conditions of Competition which, *ex hypothesi*, cannot be enforced against the local authority for want of a Seal, and I have already pointed out that the case of *Lawford* v. *Billericay R.D.C.* turns upon an implied contract and not upon the establishment by acts of part performance of the validity of the original contract.

I may add that my doubts whether the local authority becomes liable to pay merely by reason of acceptance of the preliminary plans are reinforced by the case of *Start* v. *The West Mersea School Board* (1889, 63 J.P. 440).

For these reasons I am of opinion that notwithstanding the repeal of section 174 of the Public Health Act 1875, and whether as regards Urban or Rural authorities, an architect will be unable to enforce a claim for employment and/or remuneration pursuant to Conditions of Competition issued by the authority unless

(*a*) such conditions amount to an offer by the authority which can be turned into a contract by the acceptance of the architect ; and (*b*) such offer is in writing and under the Seal of the authority.

It follows that in my opinion the Royal Institute of British Architects would be well advised to insist that Conditions of Competition issued by a Corporate Body should have the Common Seal of that Body affixed thereto.

3, Elm Court, H. I. P. HALLETT.
Temple, E.C.4.
23 September 1935.

Bye-Laws and Insurance for Reinstatement after Fire

The following letter from a member was considered by the Practice Standing Committee recently :—

I should like to call attention to an insurance matter which seems to me to be of interest to architects, and to suggest that this might be considered by the Practice Standing Committee.

The ordinary insurance of a building against fire, is a contract under which, in the case of a fire, the company has the option of paying assessed damages, or of reinstating the building into its original or agreed equal, condition.

In the case of a building partly destroyed by fire necessitating the rebuilding of a major portion, a local authority might have powers to prescribe a new building, or improvement line, which would have the effect of enforcing a complete rebuilding.

The Insurance Company being precluded from reinstatement would then revert to their option to pay assessed damages, based upon the value of the work destroyed.

Under the Town and Country Planning Act, it is true that the authority would be bound to pay compensation, but upon what scale, it is not laid down. If there was ample room on the site to rebuild behind the prescribed line, I am inclined to think such compensation might be one based on a low land value, the prescribed space being not building land. At any rate there is no certainty that the payment by the company, plus the compensation, if any, from the authority, would cover the cost of a complete rebuilding. Thus it might very well come about that a building owner properly insured to the full value of his property, might find himself called upon to pay a substantial capital sum out of pocket, to make good the results of damage by fire upon his property.

It seems to me that the incidence of town planning legislation upon existing insured properties may create new conditions not anticipated when insurance procedure was developed into its present form, and it seems that any ordinary policy of the future should include some endorsement to fill the financial gap which might occur in such a hypothetical case as I have described.

The matter seems to affect those of our members who administer estates, and to whom their clients look for advice in such matters, and also the general practitioner to whom the chances of work from rebuildings might be increased by more secure cover.

The Practice Committee consulted the Insurance Committee of the Architects' Benevolent Society on the matter and the Insurance Committee submitted the following note on the question from a representative of one of the tariff companies on the Committee :—

The point raised is an interesting one. I agree that where an insured has not made suitable provision he might find himself seriously penalised as the result of a fire, but the writer appears to be unaware that it has for many years been possible to extend an ordinary fire policy to include any additional cost thrown upon an insured owing to the necessity of complying with building or other regulations framed in pursuance of any Act of Parliament or of the same premises prior to the fire. Within the limits of the sum insured any such additional cost actually incurred with such a clause embodied in the policy would be met by the company. I enclose herewith a copy of the wording which is usually employed.

It must be borne in mind that the insured alone is responsible for the adequacy of the amount for which the property is covered, and I imagine that a property owner's architect will be able to ascertain the nature and extent of any additional costs which might be thrown on the insured.

I think, therefore, that if the position that the writer names in the last sentence of his fifth paragraph arises, then it is solely due to negligence on the part of the insured or his insurance advisers.

EXTENSION CLAUSE (BUILDINGS).—It is hereby declared and agreed that notwithstanding anything to the contrary in this policy or its conditions the insurance by the items of this Specification in Column 1 shall extend to cover :—

(*a*) ADDITIONAL COST (if any) in reinstating the portion or portions of the buildings as may have been damaged or destroyed by fire or any other peril hereby insured against as is occasioned through the necessity of complying with building or other regulations framed in pursuance of any Act of Parliament or under the bye-laws of a municipal or other authority which were not enforced in respect of the said premises prior to the fire or occurrence of any other peril hereby insured against, provided that the enforcement of such regulations shall be due solely to the necessity of rebuilding consequent upon the fire or said other peril and provided also that the total sum payable hereunder shall not exceed the sum insured by each item in Column 1 of this Specification.

The Practice Committee have decided to publish the correspondence for the information of members generally.

THE LAW OF BUILDING*

Two years ago a previous edition of this Ministry of Health Memorandum was published in the Journal (Vol. 41, pp. 141, 191, 247). The memorandum, the new edition of which includes several important additions and revisions, is of immediate interest to architects since it contains a clear statement of the law affecting new buildings, the limits of Local Authorities' powers and the methods of procedure in case of dispute.

The position is one of extreme complication as recent correspondence and Mr. Dicksee's article in the last journal have shown, but the difficulties largely arise because architects, builders and building owners fail to keep themselves fully acquainted with the general rules affecting building laws and their own rights in respect to those laws. The following memorandum should be of considerable help.

MEMORANDUM ON THE APPROVAL OF PLANS

NEW STREETS AND BUILDINGS

1. Inquiries received in the Ministry of Health show that there is much misunderstanding of the powers and duties of Local Authorities and of the Minister of Health in regard to the approval of plans for new streets and buildings. The powers and duties of Local Authorities are everywhere both limited and definite, but they are not the same in all districts and any person who does not understand, or wishes to query, the action taken by a Local Authority on plans which he has formally deposited with them should first of all ask them *under what statutory or other powers they are acting.*

If a person fails to obtain this information, or having obtained it is still unable to understand the action of the Local Authority, the Minister will be prepared to consider whether he can help.

2. In any communication about the approval or disapproval of plans it is important to mention the district concerned, i.e., the borough, or the urban or rural district (and, in a rural district, the parish). The Minister receives numerous inquiries and complaints which it is impossible to answer because the law is not everywhere the same, and the information given is too scanty for any investigation to be made.

3. This memorandum has been drawn up to deal with some of the points which ordinarily arise, but it does so in general terms only, and persons who wish to be informed of their legal rights or liabilities in particular circumstances are warned that no memorandum of this kind can cover every case, or take the place of the advice of a solicitor with all the facts before him.

The memorandum should be read through : paragraphs taken from their context may be misleading.

LOCAL ACTS OF PARLIAMENT

4. This memorandum sets out as far as possible the *ordinary* law, which is almost wholly comprised in general Acts of Parliament, bye-laws, and planning schemes. Much of what is said in it will not apply in the administrative County of London, where building is for the most part controlled by local Act of Parliament or is otherwise different from the ordinary law. Further, some provincial Local Authorities have local Acts of Parliament which may add to or vary the ordinary law in regard to buildings and streets. Local Acts of Parliament passed in the present century usually add to rather than alter the general law, but some of the older local Acts (and the London Building Act, 1930, which was a consolidating measure) contain complete codes of building law differing from that in force in the country at large. The requirements of these Acts are often much more rigid than those of the general law and of bye-laws, and the terms of the particular local Act, where one exists, must always be ascertained.

In connection with this paragraph see the reference to local Acts in paragraph 19 (*a*) below.

BYE-LAWS

5. (*a*) GENERAL. In most districts bye-laws with respect to new buildings have been made by the Local Authorities, and in many districts bye-laws with respect to new streets are also in force. It is essential that any person who proposes to erect or alter a building or to lay out or construct a new street should know what is in the local bye-laws. Any person is entitled to inspect them at all reasonable hours at the Local Authority's offices without payment, and to be furnished with a copy on payment of a small charge. It is thus not necessary to inquire at the Ministry what are the contents of the local bye-laws ; persons affected by those bye-laws could save themselves the trouble and delay of correspondence by taking advantage of their legal right to consult, and obtain copies of, the bye-laws for themselves.

(*b*) PLANS. Where bye-laws are in force they always require that every person who intends to construct a building to which the bye-laws relate shall submit plans to the Local Authority, and they commonly contain a similar requirement as to persons who lay out new streets. The bye-laws requiring notices and plans will be found at the end of a series and they should always be consulted before any work is begun. As a rule they only require that the plans shall show exactly what is proposed, but there may be local variations about the scale, etc. It is not usually required that they shall be drawn on any particular material and it is never compulsory to have them drawn by an architect. They should, however.

* C.34. R.P.W. 63055—1—250 H E (1 September 1935). Published by permission of the Comptroller of H.M. Stationery Office.

be accurately and intelligibly drawn on suitable and durable material, and the employment of an architect (apart from other obvious advantages) may often save time and money by assisting the Local Authority to grasp at once what is proposed.

Section 158 of the Public Health Act, 1875, requires approval or disapproval of plans to be given in writing by the Local Authority *within one month* of the delivery of the plans to them. Needless delay in obtaining approval can be avoided by noting that the section does not recognise any middle course between approval and disapproval (such as approval subject to compliance with a bye-law which the plans do not show will be complied with, or subject to some modification of the work to secure compliance with a bye-law which the plans contravene) and that Local Authorities therefore are not entitled (except where there is express legal authority—e.g., see paragraph 13 below) to approve plans subject to conditions. Careful reference to the bye-laws before, during, and after the preparation of plans and before they are deposited with the Local Authority, to ensure as far as possible not only that they accord with the bye-laws as to the deposit of plans but that the work shown on them accords with the bye-laws applicable to that work, should therefore expedite approval, as well as save unnecessary trouble for the person depositing the plans and the Local Authority alike.

Wherever a bye-law is in force requiring the submission of plans of any work it is a separate offence, for which the Local Authority can prosecute, to proceed with the work without submitting plans drawn in accordance with the bye-laws, even though the proposed work itself complies with the bye-laws. The Minister has no power to relieve any person from this obligation. A person is not, however, compelled to wait for his plans to be approved before beginning to lay out a new street or to erect a building (not being a " temporary building " : see paragraph 17 below), although it is evidently desirable to find out whether the Local Authority see any legal obstacle to the proposal before the work is begun.

The remedy if a Local Authority does not pass plans which comply with the bye-laws is not in the Minister's hands. If plans complying with the law are disapproved, or if approval is withheld, three courses are open to the person submitting the plans :—

(1) He can apply to the Courts for a mandamus to compel the Local Authority to pass the plans ;
(2) He can apply for a declaratory judgment under Order XXV, Rule 5, of the Rules of the Supreme Court, to the effect that the bye-laws would not be contravened by the plans ;
(3) He can proceed to erect the building, and defend himself if proceedings are taken against him.

Complaint is sometimes made that plans deposited with Local Authorities are retained against the will of their owner. *Prima facie*, a plan is the property of the person by or on behalf of whom it is deposited, and he can bring an action for its recovery or for damages against a Local Authority who retain it without his consent or some legal authority, but Section 16 of the Public Health Acts Amendment Act, 1907 (where in force) empowers a Local Authority to retain *approved* plans, etc., and a few Local Authorities have provisions in local Acts—see paragraph 4 above—relating to the retention of plans.

The general law does not authorise a Local Authority or its officials to receive any fee for the examination of plans deposited under the requirements of the bye-laws or for the inspection of streets or buildings, the testing of drains, or the examination of the connection of drains to sewers.

(*c*) Enforcement. Every Local Authority has the power to enforce its bye-laws—either by pulling down any work which contravenes them or by proceeding against the offender for penalties (see paragraph 6 below)—but the Minister has no power to compel enforcement.

Where it is alleged that work is being done in contravention of the bye-laws, the person doing the work can be prosecuted by the Local Authority, or by any person " aggrieved," or by any other person who obtains the consent of the Attorney-General (Section 253 of the Public Health Act, 1875). Note firstly that a " person aggrieved " (which in this connection may be understood as being one whose interests are affected) *does not need any consent*, and secondly, that, even where the Attorney-General's consent is necessary, the section does not contemplate his taking proceedings : it is still for the person who alleges that there has been a contravention of bye-laws to bring the case before the Courts.

(*d*) Districts Without Bye-laws. In some districts there have never been bye-laws ; in others, bye-laws which were formerly in force have been revoked by the Minister, because he was satisfied that they were or were likely to be an unreasonable impediment to building (see the second part of paragraph 20 below as to the powers of the Minister in this respect), or have otherwise ceased to be in force.

Where there are no bye-laws in force requiring plans, there is no obligation upon a person to submit plans to the Local Authority, and Section 158 of the Public Health Act, 1875, mentioned in sub-paragraph (*b*) above, applies only to plans *which are required by any bye-law* to be laid before the Local Authority. It follows that, if a person submits plans to a Local Authority when there is no obligation upon him to do so, there is no obligation upon the Local Authority to comply with the requirements of Section 158 to approve or disapprove the plans within one month. Alternatively, it may be that plans are required, but the Local Authority's jurisdiction over the laying out or construction of a new street, or the construction of a new building, is more limited than is usual. This illustrates the importance, emphasised above, of ascertaining the exact position locally before preparing plans and submitting them to the Local Authority.

BUILDINGS GENERALLY

6. Every structure which is a new building within the meaning of the Public Health Act, 1875 (in which, as extended by later Acts, the words have a wider and more technical meaning than in ordinary speech) must comply with the bye-laws in force in the district (subject to what is said in paragraph 19 below) unless exempt from them. The bye-laws themselves should be consulted for the exemptions ; usually two or three exemption clauses will be found at the beginning. Local Authorities have no power, except as mentioned in paragraph 19 of this memorandum, to approve a plan for a building which does not comply with their own bye-laws, and if they purport to approve the plan it is nevertheless open to them or to any person aggrieved by the execution of the work to prosecute the persons executing it, notwithstanding the purported approval. Conversely, if any proposed work complies with all the bye-laws and any other legal enactments which apply to it the Local Authority cannot effectually disapprove or withhold approval of the plans, and any such disapproval or refusal or neglect to approve will not be operative to prohibit the work.

As already explained in paragraph 5 (*c*) every Local Authority can enforce its bye-laws in one of two ways—by pulling down work or by the recovery of penalties. The power to pull down buildings is derived (1) from Section 158 of the Public Health Act, 1875, and (2) from a bye-law which will be found in every series. This power is limited and any person interested should consult both Section 158 and the bye-laws very carefully. The power to recover penalties includes a power to recover fines for each day during which the offence continues after conviction. A person against whom any proceedings for contravention of the bye-laws are taken has no right of appeal to the Minister except as set out in paragraph 19.

STREETS GENERALLY

7. What is said as to buildings in paragraph 6 applies also to streets. The definition of "street" in the Public Health Acts is very wide—see Section 4 of the Public Health Act, 1875. A person who proposes to erect a building cannot normally be compelled to construct, or even to lay out, a new street or to provide other means of access, but if he does lay out or construct a new street he must comply with the appropriate bye-laws with respect to its level, width, and construction. Here again Local Authorities are not only entitled, but are bound, to enforce their bye-laws, subject to what is said in paragraph 19 below.

The question what constitutes the laying out of a new street is difficult, and has given rise to many cases in the Courts. The Minister has no power to decide it authoritatively (but see paragraph 21 of this memorandum).

While—as is said above—Local Authorities are not *prima facie* entitled, for the purposes of Section 158 of the Public Health Act, 1875, to look beyond the plan of a *building* submitted to them, or to consider the means of access to it, any person proposing to build beside an existing highway should consider Section 30 of the Public Health Act, 1925. Under this section, where it appears to a Local Authority, or (by virtue of Section 30 of the Local Government Act, 1929), in a rural district, to the County Council, that the whole or any portion of an existing highway—*note that the section does not apply if an existing road or path is not a highway*—will be converted into a new street as a consequence of building operations in the vicinity, the Local Authority or County Council as the case may be may make an order declaring it to be a new street. Public notice must be given of the order for at least one month, and an appeal against it can be made to Quarter Sessions, before it comes into force. There is no right of appeal to the Minister. Once the order is in force a person who builds beside the highway is deemed to be laying out a new street and any bye-laws in force as to the level and width of new streets will apply.

(*To be continued*)

Concert of Chamber Opera at the R.I.B.A.

A concert of Chamber Opera was given at the R.I.B.A. on Monday evening, 16 December, by a group of singers under the direction of Ernst Schoen and Georg Knepler.

The singers were: Nora Colton, Barbara Lane, Katherine Miller Jones, Eugenia Triguez, Donald Campbell, Josef Galinsky, Howard Hemming, Sydney Limbrey, Charles Schloss, and Frances M. Collins and Georg Knepler were at the pianos.

The programme consisted of the third act of "Dido and Æneas," by Purcell (1656-1695). Scene V of "La Carosse du Saint Sacrement," by Lord Berners, and the Finale of the second act of "Don Pasquale," by Gaetano Donizetti (1797-1848).

In this country at the present time there is very little opportunity of hearing any form of opera other than Grand Opera, and this group of singers intends to start producing varying types of small operas either on the stage with orchestra or in the concert hall, their first introduction to the general public being by a broadcast in January next, followed by a public performance.

We were very fortunate on Monday evening to have the opportunity of hearing this very original company of singers before they appear in public, and our thanks are due to Mrs. Lanchester for making this possible.

Of the three excerpts from the operas which were given, it is difficult to say which was the most appreciated—each was a perfect example of its kind—"Dido and Æneas" is famous among the English classical operas, written at a time when music did flourish in England in a manner which is but recently being revived.

Lord Berner's opera, the libretto of which is taken from a story by Prosper Mérimée, scintillates with wit and coquetry, but I can well imagine some of the older members of the R.I.B.A. shaking their heads and murmuring, "What is the music of to-day coming to?"

If one may single out any of the singers, I should like to mention Nora Colton, who sang the part of Périchole in this opera—her performance was presented in a beautiful easy singing voice, coupled with witty acting ability and a perfect French accent—altogether a charming and original singer.

The third item, "Don Pasquale," by Donizetti, is another "Figaro" or "Barbiere di Siviglia," and is full of intrigue and gaiety: the composer was a follower of Mozart and Rossini, and almost succeeded in writing as successfully—the opera sparkles and flows along in the traditional Italian style.

The company has a truly able conductor in the person of Georg Knepler; its ensemble is perfect and their musicianship and tone quality calls for praise indeed, whilst the whole performance was greatly aided by the two pianists, one of whom was the conductor. We give this company our best wishes for their future activities and look forward to hearing them on many occasions.

It was delightful to observe how appreciative was the large audience assembled in the Florence Hall, and at the conclusion of the performance an opportunity was given for meeting the artistes, congratulating them and expressing our sincere thanks for the very evident artistic performance of these varying types of opera—such occasions might well be repeated. A. M. A.

Obituary

C. H. B. QUENNELL [*Retd. F.*]

My memories of C. H. B. Quennell go back some thirty-four years, when a fellow student of the old Architectural School of King's College in the Strand (now amalgamated with University) took me to see the Quennells at the house they had just built for themselves at Bickley in Kent. They were an arresting couple—Quennell, with his great height and thin humorous lantern-jawed face, which had a queerly engaging way of lighting up in moments of enthusiasm or friendliness, and Mrs. Quennell, who as Miss Marjorie Courtney, had already made a name for herself as a painter. Quennell was ten years my senior, and at that time in the full tideway of his domestic practice. He was engaged in the designs for many large houses at Hampstead and elsewhere.

His own house was a very good example of his art. At this distance of time I cannot remember it with any exactitude, but the impression of his early home remains with me as one of quiet good taste, a quality again exemplified in the last house he built for himself at Berkhamstead, which made a very charming setting for himself and his family. All my recollections of C. H. B. are very vivid, for his was a vivid personality.

At that first meeting two things stand out from the rest. One was a drawing of a windmill he had just made, for he was a vigorous and entertaining draughtsman, and the other some designs for garden furniture which he was engaged on for the late Mr. John P. Whyte.

I realised in later life that both these incidents were very illustrative of Quennell's interests. He was essentially a country man and a lover of the countryside. A windmill, a farm waggon, a five-barred gate, a simple cottage chair were the objects of his abiding interest.

Probably as an artist he was at his best in expressing the qualities he found in these examples of rustic craft in equivalents of every day life, such as the garden furniture to which I have referred or in the more intimate details of his houses. For the next five years I met him at more or less frequent intervals and I cannot even now forget the pleasurable excitement of those fugitive encounters.

It is not given to all of us to be gracious to our juniors, but somehow one never thought of Quennell as a senior, he was always the sort of happy playboy who refused to grow up.

At this period the chances of life divided us, and except for a few stray encounters at the R.I.B.A. and elsewhere, I lost touch with him until some six years ago, when by a happy chance I took a cottage in his particular country. We had not been established very long when one June evening, with much shouting and hulloaing, the Quennells discovered our very remote retreat. At this time they were engaged in that wonderful series of books with which their name will be carried forward through the successive generations.

Commencing with the *History of Everyday Things*, they produced book after book dealing with all phases of life in various countries. Running through the warp and woof of their creations was the love of architecture and the rural crafts associated with woodworking and building.

I doubt if either Mr. or Mrs. Quennell ever realised the magnitude of the work that they accomplished. His was essentially a modest nature and it was a matter of some regret to him that his literary labours had left him with very little time or opportunity to practise the art he loved. Time has, however, a queer way of working out its revenges, and able as Quennell was as an architect, it was through the surrender of his art that he was to become famous.

I remember a talk I had at some conference with one of the leaders of education in this country who had been trying to revive my drooping spirits—we had been discussing the low level of architectural taste in this country—when I was told that it might cheer me up to know that there were a great many architectural appreciation classes in the secondary and public schools. On asking what books they used, I was told first and foremost the Quennells.

It is a sad coincidence that his passing should have synchronised with the eve of the production of their latest work, *The Good New Days*.

Those of us who knew and loved him have lost a joyous companion and the world at large a great teacher.

STANLEY C. RAMSEY [*F.*]

The death of C. H. B. Quennell will come as a great loss to those who knew him and had the privilege of working with him. It was about the summer of 1913 that I entered his office in Great Peter Street as a junior assistant. In those days he was handling a busy and growing practice. The many houses at Hampstead, Bickley and in Scotland, and elsewhere, designed by "Q.," as we affectionately called him; all show the unmistakable hand of the true architect.

His was a generous personality and he gave a full share of his friendship and advice to his staff. To be in his office was almost to be a member of his family.

Quennell was hard-working, a brilliant draughtsman who could turn out rapid, but finished sketches in an amazingly short time.

Most of his letters to clients were sent in his own scholarly handwriting—fully illustrated.

He had a fine eye for craftsmanship and delighted in the study of an old farm wagon or ancient cottage roof.

I believe he had actually worked at the bench in his younger

days and thus obtained one of the most valuable elements of training an architect can have.

Always splendid company, a good raconteur and of an adventurous disposition, he used to hold the office enthralled with his humorous experiences as a pioneer motorist.

Quennell was one of a dwindling band of Architects who are essentially individualist and who give a full place in their work to the study of materials.

After being associated with him for a very short time one felt that he had no patience with cheap or shoddy work and hated any form of dishonest construction or sham effect.

Of his work for the R.I.B.A. ; and as a designer, and other details of his very active life I have not the ability or right to recall. This must be left to a more able pen than mine.

He will be greatly missed. PHILIP S. HUDSON [*A.*]

Mr. C. H. B. Quennell, who died on 5 December in his sixty-fourth year, began his architectural career as an articled pupil to Messrs. Newman & Newman and started his own practice in Westminster in 1896. In 1895 he obtained the National Gold Medal for architectural design at South Kensington and also an R.I.B.A. medal of merit and £5 in the Soane Medallion competition.

His architectural work consisted chiefly in designing medium-sized country and suburban houses, including some at Bickley in Kent, and in Hampstead, and a housing scheme for Crittalls at Braintree. He also built St. John's Church, Upper Edmonton, and a large house, Aultmore House, Inverness-shire. Soon after the war he was commissioned to tour the U.S.A. to report on American industrial buildings and organisation.

To architects and laymen all over the world he is best known as the author of the series of books on everyday things and life. There were eleven of these books dealing with everyday things in England from 1066 to 1934, everyday life in Homeric, Archaic and Classical Greece, and in the old stone age, the new stone, bronze and early iron age, in Roman Britain and in Anglo-Saxon, Viking and Norman times. He also published a guide to Norwich Cathedral and a volume of his house designs (1906) called "Modern Suburban Homes." The Everyday books were written jointly with his wife, a perfect collaboration which has had an incalculable influence not only on lay thought but on the development of a wide interest within the profession which ultimately affects the whole quality of building. A final volume has been announced, "The Good New Days," a memorial of the keen optimism and youthfulness which characterised all his writings, conversation, and part in public affairs.

Mr. Quennell was a member of the R.I.B.A. Council from 1912 to 1925 and on the Board of Architectural Education from 1928 to 1930. He also served on the Town Planning Committee from 1914 to 1925. He married Miss Marjorie Courtney in 1904 and had three children, one of whom is Mr. Peter Quennell, the author.

CHARLES W HARRIS [*F.*]

Mr. Charles W. Harris (of Messrs. Harris & Hobson), a well-known Liverpool architect, died suddenly on 10 December 1935 following an operation.

Born in 1872, the eldest son of the late William Henry Harris, he was educated at the Waterloo High School. He was articled to the late Henry Hartley [*F.*], F.S.I., 8 Harrington Street, Liverpool, and continued in association with him until 1906, when he entered into partnership with the late Laurence Hobson [*F.*], who predeceased him in 1928.

His earlier work in association with Mr. Hobson was of a varied character and comprised domestic, business and industrial premises, including English Margarine Works, Broadgreen ; offices for William Gossage & Sons, Ltd., Widnes ; extension to premises for Messrs. G. H. Lee ; factory, Peters Lane for Messrs. George Wall & Co. : extensions to the Lune Laundry, Wavertree ; alterations to the "Courier" offices, Liverpool. In recent years he collaborated with Mr. G. Grey Wornum [*F.*], London, in the erection of the Haig Memorial Homes, Muirhead Avenue, Liverpool.

He engaged extensively in the practice of a surveyor, including the rating and valuation of many important buildings.

In his younger days Mr. Harris was an enthusiastic yachtsman and golfer, being one of the earlier members of the West Derby Golf Club.

He was elected an Associate of the Royal Institute of British Architects in 1896, a Fellow in 1915, and served for some years as a member of the Council of the Liverpool Architectural Society.

EDGAR WOOD [*Retd. A.*]

Mr. Edgar Wood, architect and painter, a past-President of the Manchester Society of Architects and at one time President of the Northern Art Workers' Guild, died at his home in Italy on 12 October.

Born in 1860, he was educated at Middleton Grammar School, and was later articled to Mr. James Murgatroyd in Manchester. He practised first at Oldham, later moving to Manchester, where, in 1900, he entered into partnership with Mr. J. Henry Sellers. Their work included many houses at Middleton, Hale and elsewhere, the Wesleyan Church at Middleton, the Christian Science Church in Victoria Park, Manchester, the Durnford Street School, and the Elm Street Council School in Middleton. There is also a delightful garden foundation at Middleton designed by Wood.

The chief characteristics of Edgar Wood's work are a keen sense of design, a delight in colour and careful detail, and a fine appreciation of craftsmanship. In many cases a traditional style was followed, but in not a few, particularly where he used flat roofs, he anticipated by twenty years some of the best qualities of the "modern" movement in architecture. His eager interest in every sort of art and craft connected with his profession made him an admirable mentor, and his help and advice was freely given to the students with whom he came in contact.

His reputation was perhaps greater on the Continent than in England, excepting Manchester. Much of his work was published abroad, and he contributed many studies in decoration in German publications.

Soon after the war he retired and lived in Italy, where he built a house at Porto Maurizio, which he decorated largely by himself. Here he continued to paint, sending home from time to time pictures showing a strong feeling for atmosphere and vivid colour.

Mr. Wood was elected an Associate of the Institute in 1885 and retired in 1932.

HERBERT JOHNSON GAYTON [*F.*]

Mr. H. J. Gayton was born in 1870 and died on 5 October 1935. He was articled to Messrs. Chas. Dorman & Son in Northampton, and in 1899 joined the staff of the estate department of Messrs. P. Phipps & Co. (Northampton & Towcester Breweries), Ltd., 8, Gold Street, Northampton, as architect to the company.

His work was general and consisted in rebuilding, altering and designing new licensed houses. His last completed work was the Franklins Garden Hotel, Northampton, and at the time of his death he was engaged in rebuilding the White Hart Hotel, Corby, and the Woodman's Arms Inn, Deanshanger, Bucks.

Mr. Gayton was elected a Fellow of the Institute in 1931.

Correspondence

THE STANDARDIZATION OF SCHOOL DESIGN

Borough of Heston and Isleworth
Public Health Department.
Hounslow.

10.12.35.

To the Editor, JOURNAL R.I.B.A.

DEAR SIR,—In the *Times* issue of 20 November I see with a certain amount of concern that the London County Council Education Committee are handing over to the Council of Art and Industry the task of designing an elementary school with the hope that it may act as a model. This is to be subject to certain safeguards.

I understand from enquiries that it is to be entrusted to an individual architect.

The reason I view this with concern is that, as Chairman of the Ideal Classroom Committee, set up by the Medical Officers of Schools Association several years ago, I have been in close touch with the design of schools and their equipment. The Committee is a joint one with representatives of the R.I.B.A., Heating, Ventilating and Illuminating Engineers, and all manner of teachers concerned in the various types of schools. I have not called it together recently for the very substantial reason that school design is in a state of flux, and that had we attempted to lay down a standard; if that had been accepted it would have tended to sterilise such initiative as has been displayed in recent years in school architecture.

Some time ago Sir Leonard Hill read a paper before the R.I.B.A. which made apparent the fact that most of those present were unaware that ventilation had passed out of the realms of the chemical into that of the physical. So, too, with the betterment of housing conditions, there may possibly be an entirely different outlook with regard to the desirability of the open-air type of school, partly also due to the better nutrition we hope to see brought about in the humbler members of society.

Too much attention must not be paid to the eulogies of the teachers who have been transferred to new schools. To borrow from ecclesiastical sources, they are "the people that in darkness sat, who a glorious light have seen," and have been so dazzled by that light, the new fitments, etc., in comparison with their previous surroundings, that it is not until some time afterwards when they come to see the deficiencies apparent when the school is at work that they become critical.

One has seen systems damned with faint praise without any real knowledge of their working and their results. One has seen architectural adventures with no experience behind them, which can only be written down as dismal failures. One has seen, put forward as something new, things which we hoped were damned for all eternity nearly thirty years ago. Surely the point from which a school should be designed is the unit of the classroom. The classroom, after all, is the all important element in the school. The design of this unit depends on so many things. Take lighting, for instance: is it best for a child to have unilateral lighting, whereby he deals with only one-sided shadows, or bilateral lighting, whereby he has to deal with conflicting shadows?

On the question of lighting, I may instance a new school in which the firm who installed the lighting asked the Society of Illuminating Engineers to visit, as they regarded it as a model exhibit of efficient lighting. The School Lighting Committee of that Society, of which I was a member, who visited the premises, unhesitatingly condemned the lighting in the class-room on account of glare, and that in the great hall by reason of the fact that in order to save expenses, due to the law that the intensity of light varies as the inverse square of the distance from the source, the units had been placed so that they were exactly on the level of the eyes of the speaker who attempted to address anybody from the platform, with the result that the audience were more or less invisible.

Again, in another school, the lights in the hall were of the artistic parallel horizontal plane type, with an unenclosed high wattage unfrosted bulb. As the lamps were on the sight-line of anyone on the platform, the speaker looked straight into the naked light between the planes—an instance of glare of the very worst type.

Take again the blackboard: in one of the largest public schools in the country, a celebrated architect for the first time put in a special window to light the blackboard, but the window failed in most of its purposes because it was only half the height of the other two windows lighting the rest of the classroom. The last time I happened to be in that school, in one classroom all the boys were sitting with their backs to the windows because the Master said he got better lighting on the corridor wall opposite the window than he did on the blackboard with the special window.

How many architects know that a classroom is well lit if one per cent. of the light falling on the sill falls on the desk next the corridor wall?

Again, I was called in consultation by the Medical Officer to one of our best-known public schools by reason of the large humber of eye defects which were arising. The lighting I found on measurement to be utterly and hopelessly inadequate, only a few of the classrooms, and these newer ones, being adequately lit. The studies had, for many of the boys, one sixth of the minimum lighting requirements. The stairs were nothing but a source of danger by reason of lack of light and ill-placed shadows, and at the end of one corridor I was unable to get any reading whatever on the Lumeter with which I was measuring the light.

It seems to me, therefore, that at the present time, when so many things in the teaching world are moving with such rapidity, it is unwise to attempt to standardize school design.

If the London County Council really want to do the best for their schools, I would suggest that money spent in erecting experimental classrooms, where work can be carried out on the lines of the Building Research Station at Watford, trying out all the different methods of heating, lighting, ventilation, and facilities for teaching, will be far better worth while than letting loose a society of this kind on a school design which may be one of those buildings in which what is truth to-day may only be heresy to-morrow, even if it attains to truth to-day, which I doubt.

Finally, one has to take into consideration the differences in teaching methods as influencing the classrooms, as exampled in America, where three sides of the infant classrooms have permanent blackboards, on which lessons are left for long periods. We in this country, so far, have ignored anything except what is known as the facing wall on which to put a blackboard. At the same time, teachers are allowed to hang brown paper with children's drawings on it on the reflecting wall opposite the window, thereby decreasing

enormously the reflected light on the desks nearest the drawings.

There are large fields for research still before what I may call the "ideal classroom" is evolved, and thus it is that I view with concern the attempt to standardize the design of a school.

EDWIN H. T. NASH,

Medical Officer of Health and School Medical Officer, Borough of Heston and Isleworth; Past-President, Medical Officers of Schools Association; Hon. Member, Society of Illuminating Engineers; Member of 1st Joint Committee on School Lighting, 1911; Member of 2nd Joint Committee on School Lighting, 1931.

THE SLUM DWELLER AND ARCHITECTS

The Thakeham Hotel,
Worthing.

12.12.35.

To the Editor, JOURNAL R.I.B.A.

SIR,—The letter appearing in the 7 December number of the JOURNAL by Mr. Trystan Edwards reminds one of the discussion of the housing and slum question which took place in 1920 and 1921. Unfortunately I can, at the present moment, only find three letters written by myself at that time. These, in view of subsequent events and the present conditions, are of interest as forecasting what has come to pass.

It is quite plain now, as it appeared to many then, that it is quite hopeless to formulate *any* successful housing proposition so long as house building is made uneconomic by penal taxation through "local" rates, which have become income-tax in disguise, without abatement or reliefs, and often without income.

The Tudor Walters Committee in 1918 laid down the number of small houses required as 500,000, with another 98,000 per annum to replace shortages.

After spending something near £500,000,000, the census of 1930 puts the house shortage at 800,000!

The present slum clearance and rehousing schemes seem to have even less chance of success, and are financially suicidal. High rates are driving industry and population from place to place, emptying good-class houses, driving people to mass production hire-purchase expedients, and causing general instability. When this short-sighted folly is financed by inflation, for that is what the loans are, whatever name you give them, a financial crash is inevitable.

Housing is not merely a question of "workers dwellings," but must include all and every class of building, whether a political vote-catching asset or not.

The condition of all classes of building throughout the country is becoming appalling. Repairs, renewals and painting are neglected: no one can afford them.

Architects must take this matter up to save the country if not in their own interests.

I am, Sir,
Yours faithfully,
E. G. HOLTOM [*F.*]

THE BATH BILL

63 Egerton Gardens,
London, S.W.3.

16.12.35.

To the Editor, JOURNAL R.I.B.A.

SIR,—With reference to my letter of 23 November, I now find that the paragraph referring to Mr. Taylor was written under an entire misapprehension; the statement that he was responsible for the design of the improvements is not correct.

I apologise for having made this mistake and for trespassing upon your valuable space.

I am, Sir,
Your obedient servant,
PATRICK ABERCROMBIE [*F.*]

NOTES

APPOINTMENT VACANT

An appointment is vacant in India for an architect experienced in reinforced-concrete work; age to be under 40; salary not more than £1,500 *per annum*, according to qualifications.—Applicants please write to the Secretary at the R.I.B.A. without delay.

R.I.B.A. PRIZES

The Council of the R.I.B.A., on the recommendation of the Board of Architectural Education, have made the following awards:—

R.I.B.A. Silver Medal and £5 in Books.

The R.I.B.A. Silver Medal and £5 in Books for Schools of Architecture recognised for exemption from the R.I.B.A. Final Examination has been awarded to Mr. Cecil Stewart, of the School of Architecture, Edinburgh College of Art.

R.I.B.A. Bronze Medal and £5 in Books.

The R.I.B.A. Bronze Medal and £5 in Books for Schools of Architecture recognised for exemption from the R.I.B.A. Intermediate Examination has been awarded to Mr. C. H. Hyde, of the Birmingham School of Architecture.

Certificates of Honourable Mention have been awarded to Mr. Douglas Beaton, of the School of Architecture, Robert Gordon's Colleges, Aberdeen, and Mr. N. P. Thomas, of the Welsh School of Architecture, The Technical College, Cardiff.

R.I.B.A. Prize for Schools of Art and Technical Colleges.

The R.I.B.A. Prize of £5 in Books for Schools of Art and Technical Colleges, with facilities for the instruction of intending architects, has been awarded to Mr. W. Garner, of the City of Hull College of Art and Crafts.

CORRECTION

On p. 131 of the last number of the JOURNAL in Mr. W. A. Pite's memoir of his brother, the late Mr. Beresford Pite, the words "his arisal in the meeting room" should read "his arrival."

ALLIED SOCIETIES

NORFOLK AND NORWICH ASSOCIATION OF ARCHITECTS

Students' Evening Debate

At the ordinary general meeting on Wednesday, 11 December, in Cosin Room, Suckling Hall, Norwich, there was a students' debate on the motion that " It is the opinion of this house that flats rather than cottages offer the best solution to the present housing problem." The President, Mr. E. W. B. Scott, was in the chair, and 29 members were present.

The motion was proposed by Mr. R. O. Charter, who having referred to the great amount of housing still required asked what was to happen to the cleared areas in towns if all new houses were to be cottages outside the towns. He showed the risk of driving people to use houses as tenements which were not designed for the purpose and urged the erection of properly planned flats with communal amenities. He referred to the words of the 1935 Housing Act, which admit the need for flats, and then described the details of the latest approved types of lay-out and showed how the density of houses per acre could be raised and also the net area of open space reserved for playgrounds, etc.

Mr. D. C. Purcell, who opposed, first challenged Mr. Charter's proposition on the score of the inconvenience of staircases for women and children and the expense of lifts. Lifts, central hot water supply, etc., could only be given if rents were raised. He quoted Sir Herbert Humphries, late Engineer of Birmingham, to support his plea that the tenants preferred individual houses. Flats could not give the same privacy. On the question of density he argued that a flat scheme would not take more families per acre unless they were five stories high. Blocks more than five stories were not favoured by the Ministry of Health and Continental builders had concluded that flats of more than three or four stories were not practical financially. He questioned the hygienic qualities of refuse chutes and finally suggested that architects wanted to build flats because they gave greater possibilities for design.

Mr. Purcell was followed by Mr. T. C. Ralph as seconder to the motion. Flats, he suggested, were not being erected more than three stories except when absolutely necessary. He pictured the pleasures and successes of communal gardening and the social gain that would come from the existence of communal playgrounds. There would also be a saving in rates if we could concentrate our cities. Authorities had merely increased their towns by building suburban houses, and had left the evils of the centre untouched. If they had solved the housing problem they had increased the traffic problem ten-fold.

The fourth speaker was Mr. M. S. Hart. He suggested that the British working man was more secure and happier than any others in the world because he had preserved his individuality and an idea of the sanctity of home life. All this flats would destroy. " Dull, lifeless, unassuming and sluggish," men could not spend their lives in a barrack-factory. Plan houses in terraces as had been done in Catton Grove Estates, Norwich, and in Amsterdam. The King had said " the foundations of a nation's glory are set in the homes of the people "—but flats are no homes.

In the discussion Mr. Meredith said that it was difficult to build N.-S. aligned flats in Norwich, nor were five stories popular there. Glazed pipe refuse chutes required much work to keep clean. The ex-slum dwellers, particularly in Mill Hill, liked their gardens in new housing estates ; they tried to provide gardens for all flat-dwellers who appreciated them.

Mr. Swindells said that new suburbs took people far from their work. Flats could be just as private as houses. Mr. H. J. T. Gowen claimed that it was largely a matter of individual preferences and also suggested that housing estates were often made unsightly by the erection of sheds and chicken runs.

Mr. C. J. Norton raised the question of the amount of agricultural land absorbed by suburban housing and Mr. G. H. Anderson told the meeting that transport from Manchester suburbs to the city cost the workers 5s. to 7s. a week, and two hours a day travel time.

Mr. S. J. Wearing said that in certain cases flats and in others cottages were the right solution. Mr. C. L. Lister said that house building on cleared city sites would be a sheer waste of land and that housewives liked to work on the level. Mr. C. H. Dann, against the motion, urged the need for gardens, and Mr. C. Upcher suggested that public opinion would eventually solve the problem, and that the most important person was the woman. Mr. F. M. Dewing said flats in towns and cottages outside, and Mr. M. Little thought that future generations would prefer flats. Mr. J. Gordon Davies asked questions about the upkeep of flat gardens.

The President called upon Mr. Purcell and Mr. Charter to reply, and then put the motion to the vote. There were 12 for and 11 against.

WEST YORKSHIRE SOCIETY OF ARCHITECTS

Mr. Victor Bain presided at the annual dinner which was held at the Midland Hotel, Bradford, on December 6, when there were present over 200 members and guests, including Mr. Percy Thomas, P.R.I.B.A., and Mrs. Thomas ; Sir Ian and Lady MacAlister ; the Lord Mayor and Lady Mayoress of Bradford ; The Bishop of Bradford and Mrs. Blunt ; Lt.-Col. Ernest Gee ; and Mr. H. Heldsworth, M.P., who, in proposing the toast of the R.I.B.A., said that he regraded architects as being in a superhuman class for which he entertained the greatest regard, seeing that they could conceive, plan, and produce fine buildings ; and he was glad to say that there were signs that architects' services would be more and more in demand.

In responding, Mr. Percy Thomas observed that, for the moment, he was living such a strenuous life, struggling through three or four banquets a week, that he expected to have to go on a diet. He considered that never before had the prospects of architecture been so bright as at present. Almost every week, he might almost say every day, the Institute were called upon to nominate members of their profession for the carrying out of some important public work. He hoped that registration would soon become a very much more real thing than at present, and it was the constant endeavour of the Institute to bring this about.

Mr. Victor Bain, in proposing the toast of the Municipalities within the Society's province, said that by having formed branches of the Society, of which they now had six functioning, they hoped to get into much closer touch with the local authorities, especially in the matter of giving free advice regarding control of design and materials, under the Town Planning Acts. Architects and the authorities concerned could here meet on common ground—namely, their mutual desire for the improvement of the environment of their towns.

THE BIRMINGHAM AND FIVE COUNTIES ARCHITECTURAL ASSOCIATION

At the fourth meeting of the current Session, held in the Galleries of the Royal Birmingham Society of Artists on Friday, 15 November, the President, Mr. Alfred Hale [*F.*] occupied the chair, and an address entitled " From Timber to Stone in Local Building " was given by Mr. Benjamin Walker, F.S.A. [*A.*].

In the immediate neighbourhood of Birmingham, the lecturer remarked, good building stone is rare, but the local woodlands provided a plentiful supply of timber of large scantlings, and it therefore naturally followed that the earlier buildings of Birmingham

were chiefly of timber-framing. This form of construction continued well into the seventeenth century and then a change took place ; timber-framing fell out of fashion, and for more than a century and a half practically all the buildings of the town were of brick.

With the coming of the canals at the end of the eighteenth century another change took place in local building. By means of these canals Birmingham could be supplied, both easily and cheaply, with stone from distant quarries, and as a result stone buildings began to appear in the town in increasing numbers. One of the first was the recently demolished Blue Coat School, built in 1794 by John Rawstorne, a pupil of James Wyatt, who used a Keuper sandstone from the neighbourhood of Nuneaton. The canals also made it possible for Joseph Hansom to use Anglesea stone for the Town Hall in 1835, and Charles Barry to use Derbyshire stone from Darley Dale and Duffield for King Edward's School in New Street in 1836, while other notable stone buildings of contemporary date are Charles Edge's Market Hall, and Philip Hardwick's terminal station of the London and Birmingham Railway in New Canal Street.

With the opening of the railways in 1837 the use of stone became still more common, and to-day the local architect has at his disposal stone from as far away as Aberdeen, or Portland, or even from beyond the seas ; but the chief local building material is still, and probably will always be, brick made from the very extensive local beds of clay.

The address was illustrated by a large number of lantern slides prepared from photographs made by Mr. W. A. Clark.

SOUTH WALES INSTITUTE OF ARCHITECTS (CENTRAL BRANCH)

Mr. Morton Shand, M.A. (Cantab.), gave a lecture on Timber on Tuesday, 3 December, under the auspices of the Timber Development Association, to the Welsh School of Architecture, the Technical College, Cardiff, and the members of the South Wales Institute of Architects (Central Branch).

In his lecture, which was illustrated by lantern slides, Mr. Shand dealt first with the types of timber used for plywood in different regions, touching on the growth of the tree, its felling and its transport to the factory, the rotary cutting of the logs into veneers, and the cementing of those veneers into plywoods of varying thicknesses. After explaining the characteristics of the leading types of plywood, Mr. Shand showed by means of slides, and a running commentary on them, the various uses to which plywood can be put to advantage, including the covering of walls and ceilings and the making of furniture.

He concluded with a brief account of metal-faced plywood.

A hearty vote of thanks was accorded to the lecturer on the proposal of Mr. C. F. Jones [*A.*], chairman of the Central Branch of the South Wales Institute of Architects, seconded by Mr. Lewis John, M.A., B.Arch. [*A.*], and supported by Mr. Norman Edwards and Mr. J. A. Hallam.

Mr. W. S. Purchon, M.A. [*F.*], head of the Welsh School of Architecture and President of the South Wales Institute of Architects, was in the chair.

Membership Lists

ELECTION OF STUDENTS R.I.B.A.

The following were elected as Students R.I.B.A. at the meeting of the Council held on 2 December 1935 :—

PEATTY (MISS) : BERTHA MAUD, Swindon House, Swindon, Wilts.
BLOCK : NORMAN EDWIN, "Devonia," Colliers Water Lane, Thornton Heath, Surrey.
BRABY : PETER, 33, Tavistock Square, London, W.C.1.
BROWN : MAURICE JOSEPH, Sandygate, The Warren, Dawlish, S. Devon.
BROWNE : ANTONY DOUGHTY, The Wood House, Branksome Avenue, Bournemouth.
CHRISTIE : COLIN PHILIP, 26, Charnwood Road, Barwell, Leicester.
DANIELL : JAMES HENRY, 17, Peter Avenue, London, N.W.10.
FOLEY : NELSON, 6, Monkhams Drive, Woodford Green, Essex.
GILES : MALCOLM JOHN, Ivinghoe, Dorking, Surrey.
GRATTON : THOMAS OSWALD WHITE, 2, Selborne Road, Glasgow, W.3.
HART : CLAUDE LENNARD, King's College, Cambridge.
HAWKINS (MISS) : BARBARA JOAN, Ashley House, Battledown, Cheltenham.
HIRST : THEODORE JAMES, 2, Canonbury Park North, London, N.1.
HOLLAND : FRANK WOLSTENHOLME, 7, Bedwardine Road, Upper Norwood, S.E.19.
HOME : HAROLD JAMES BOYTON, 271C Archway Road, Highgate, N.6.
JONES : ALAN PETER GARNOCK, "Brentwood," Sandfield Park, Liverpool, 12.
KERNOHAN : JAMES, 80, Ardshiel Road, Glasgow, S.W.1.
LEWIS : GRAHAM EVERARD, 11A Porchester Gardens, London, W.2.
LILLIE : ANDREW CHALMERS, 39, Thorncroft Drive, King's Park, Glasgow.
LING : ARTHUR GEORGE, 175, Brownhill Road, Catford, S.E.6.
MCMORLAND : JOHN ADAM, 32, Garscube Terrace, Edinburgh.
MUHR (MISS) : ELSA, Lyndenhurst, West Hartlepool.
MUIRHEAD (MISS) : MARGARET FLORENCE, 47 Aytoun Road, Glasgow, S.1.
RATCLIFF : JOHN CLIFFORD, 6 Cumberland Road, Kew Gardens, Surrey.
REDFERN : BERNARD EDGAR, 57 Prenton Park Road, Prenton, Birkenhead, Cheshire.
SALAMAN : EUSTON DAVID PHILIP, 27, Dartmoor Street, London, W.8.
SHAW : ROBERT HENRY, 261 Crown Street, Liverpool, 7.
SLATER (MISS) : KATHARINE PAMELA, 8 Wellgarth Road, London, N.W.11.
SMITH : FREDERICK WILLIAM, 22, Walcot Buildings, Bath.
SMYTH : ROY JOHN, 1 Myddelton Park, Whetstone, N.20.
SUMMERS : NORMAN, 44, Fairleigh Drive, Leigh-on-Sea, Essex.
WOODLEY : HAROLD, 22 Park Lane, Orrell.

R.I.B.A. PROBATIONERS.

During the month of October 1935 the following were enrolled as Probationers of the Royal Institute :—

ADAMSON : COLIN KEITH, 30/31 Store Street, W.C.1.
BAILEY : JACK WILLIAM, 62 Vernon Avenue, Milton, Southsea, Portsmouth.
BARCLAY : HAROLD GRAY, 2 Allan Street, Ferry Road, Leith, Edinburgh.
BARROW : ROBERT WILLS, 10 Grove Road, Worthing, Sussex.
BEE : PHILIP RAYMOND, 110 Hurst Street, Oxford.
BRADFORD : LAURENCE ROY, Lynton House, Castle Street, Barnstaple.
BROWN : JAMES, 9 Hawthorn Terrace, Cockenzie, East Lothian, Scotland.
BROWNE : ANTONY DOUGHTY, The Wood House, Branksome Avenue, Bournemouth.
BUCKLEY : JOHN CYRIL, 14 Empress Drive, Douglas, Isle of Man.
BUDD : FRANCIS JESSER, 3 Clifton Road, Slough, Buckinghamshire.
CHADWICK : LESLIE BLOOR, 24 The Meadway, Western Park, Leicester.
CHAPMAN : RONALD FREDERICK HENRY, 24 Ashford Road, Maidstone, Kent.
CHRISTIE : ANDREW GEORGE, 46 Harley Terrace, Gosforth, Newcastle-upon-Tyne, 3.
COOPER : HENRY PATRICK, Marais à la Coque, Fauvic, Jersey, C.I.
DAVEY : WILLIAM GEORGE HARVEY, 77 Camberwell Grove, S.E.5.
DOBSON : ROGER, Front Street, Station Town, Wingate, Co. Durham.

ENGLAND : MAURICE, 21 Highfield Avenue, Idle, Bradford.
EVERARD : NUTCOMBE GUY ST. GEORGE, 6 Bloomfield Road, Epsom, Auckland, S.E.3, New Zealand.
FAULKNER : PATRICK ARTHUR, 16 Grange Road, Gunnersbury, W.4.
FOOTE : GEORGE EDWARD, 19 South Lauder Road, Edinburgh.
GLOVER : ARCHIBALD JOHN PAGE, 29 Sanderson Road, Newcastle-upon-Tyne, 2.
GORTON : ALFRED PRICE, 18 Lancaster Street, Hyde Park, W.2.
GOULD : GEORGE DAVID, "Chamundi," Marldon Road, Shiphay, Torquay, Devon.
GOULD : ROY, Hurlingham House, Station Road, Clacton-on-Sea.
GRIME : WILLIAM HORNBY, "Lurdin," Wigan Road, Standish, nr. Wigan.
HAMILTON : GEORGE DOUGLAS, Hillcrest, Circular Road, Clydebank.
KADLEIGH : SERGE GEORGE, 34 Margravine Gardens, W.6.
KENT : PETER, 19 Queensland Avenue, Merton Park, S.W.19.
LLOYD : ELWYN MORGAN, 6 Major Street, Manselton, Swansea.
LUMSDEN : MICHAEL, Police Buildings, West Port, Edinburgh.
MCGEOCH : RONALD VICTOR, 1 Buckingham Road, Tue Brook, Liverpool.
MACMATH : STUART, 84 Camphill Avenue, Langside, Glasgow.
MURRAY : JOHN EWING, "Dalrowan," Castlehill Road, Ayr.
PALMER : STANLEY, "Portland Cottage," Kirby Muxloe, Leicestershire.
PASCALL : CHRIS, Holne, Purley Downs, Surrey.
PEARSON : JOHN SAMUEL, 248 Tunnel Avenue, Greenwich, S.E.10.
PERIS : WELLAWATTAGE ALVIN, 13th Lane, Bambalapitiya, Colombo.
POWELL : GEOFFREY RHYS VAUGHAN, 13 Fairholme Road, West Kensington, W.14.
POWELL : MICHAEL CARLETON LANGHORNE, Corpus Christi College, Cambridge.
PRIGG : GEOFFREY HOWARD, 150 Palace View, Bromley, Kent.
RENTON : ANDREW, 18 New Row, Dunfermline.
ROBINSON : NEIL GUNN, 12 Woburn Road, Wallasey, Cheshire.
RYAN : MICHAEL, 55 Cleveland Square, W.2.
SEARLES : DONALD FREDERICK, 87 Lime Grove, Sidcup, Kent.
SHARMA : GULAB CHAND, c/o Walter George, Esq., A.R.C.A., F.R.I.B.A., 13 Alipur Road, Delhi, India.
SMEDS : JOHN, 1 Sunderland Road, Cleadon, South Shields.
SPENCER : STANLEY SHIPWAY, "Ethelbert," Victoria Avenue, Langdon Hills, Essex.
STEDHAM : RONALD ARTHUR, "Trelew," Carminowe Crescent, Penzance.
THOMSON : ROBERT BRODIE, 15 Beehive Road, Sheffield, 10.
TICKELL : RICHARD CARTON, "The White House," Barnston Road, Heswall Hills, Cheshire.
TINGAY : JOHN PHILIP, Cheney Farm, Eastcote, Middlesex.
TURVEY : (MISS) KATHRINE MARY JENNIFER, c/o Standard Bank of S.A., 9 Northumberland Avenue, London, W.C.2.
WARING : ARNOLD SHAW, 71 Gladstone Avenue, Chester.
WATSON : DAVID ROBINSON PATTERSON ARDIGON, Killyleagh, Belfast.
WATSON : THOMAS CAMPBELL, 68 Dee Street, Aberdeen.
WATT : (MISS) WINIFRED ALICE, 12 Bideford Gardens, Monkseaton, Northumberland.
WHEELER : JOHN EDWARD, 2 Porlock Street, Leicester.
WILKINSON : STANLEY, 67 Premier Street, Liverpool.
WRIGHT : LANCELOT ARMITAGE, Moor Mead Hill, Hitchin, Herts.
WYLIE : DONALD WILFRED, 119 Westbourne Terrace, London, W.2.
YOUNG : LEONARD JAMES, 5 New Street, St. Martin's Lane, W.C.2.

During the month of November 1935, the following were enrolled as Probationers of the Royal Institute :—

BARBER : FREDERICK WILLIAM, 8 Montpelier, Edinburgh, 10.
BETHUNE-WILLIAMS : DENIS EUSTACE, 76 Oxford Terrace, W.2.
BOWEN : DUDLEY ALFRED, "Medmenham," The Glade, Kingswood, Surrey.
BRUCE : JOHN NIGEL GREY, 7 Onslow Gardens, S.W.7.
CARROLL : DEREK RAYMOND, 9A Christchurch Avenue, N.W.6.
CHEW : ROBERT ERIC JONES, 79 Bushwood, E.11.
CLARKE : ALBERT HARRY, Northway, Ashchurch, near Tewkesbury, Gloucester.
COHEN : ISRAEL, 118 King Edwards Road, E.9.
CORNWALL : GEORGE ARNOLD, 39 Kensington Garden Square, W.2.
CRITTENDEN : JOHN STUART, "Windrush," Mitchley Avenue, Purley, Surrey.
DESYLLAS : STELIOS MESSENOS, 2 Clifton Avenue, Finchley, N.3.
DOWN : ARTHUR FREDERICK, 80 Martin's Road, Bromley, Kent.
HAYDON : GEORGE CHARLES, 2 Howards Passage, Trafalgar Street, Norwich.
HOWELL : BERNARD FRANK, 82 Topsham Road, S.W.17.
HOWELL : OWEN JOHN, 32 Nuss Hall Grove, Finchley, N.12.
INGLIS : IAIN WALKER, 26 Merchiston Park, Edinburgh, 10.
JONES : FREDERICK EVAN, 12A Springfield Gardens, Clapton, E.5.
LLOYD : ERIC THOMAS, Gutters Farm, Broomfield, Chelmsford.
MACDONALD : ALASTAIR DONALD, 17 Strathearn Place, Edinburgh.
MACKENZIE : CHARLES ROSS, 29, Craigleith Drive, Edinburgh.
MOYES : ANDREW, 40 Northover Gate, Kinghorn, Fifeshire.
MYATT : THOMAS GEORGE, 1 Beresford Crescent, Newcastle, Staffs.
MYERS : DENYS, 19 The Drive, Golders Green, N.W.11.
OLIVER : DUDLEY HALSEY, 84 St. Dunstan's Avenue, Acton, W.3.
PANTER : PAUL JAMES HENRY, 60 Hatton Park Road, Wellingborough.
PAUL : LYON BALFOUR, Cakemuir, Tynehead, Midlothian.
PLUMPTON : WILLIAM ALAN, 235 Chanterlands Avenue, Hull.
SCADDING : ERNEST FRANK, 138 Weston Lane, Tyseley, Birmingham, 11.
SCOTT : VALENTINE EVELYN, The Old Vicarage, Aust, Olveston, Bristol.
SINGLETON : WILLIAM ADAM, 79 Claremount Road, Wallasey, Cheshire.
STRETTON : NORMAN, "The Priory," Castle Street, High Wycombe, Bucks.
TOOLEY-MOORE : JACK EDWARD, 51A Rodney Street, Liverpool, 1.
TWIGG : LAURENCE HENRY, 20 Victoria Street, Alloa.
VENVIL : BRIAN FRANK, 22 Goodwyn's Vale, Muswell Hill, N.10.
WEBB : REGINALD JACOB, 161 Old Butt Lane, Talke, Staffordshire.
WHITEHEAD : ALAN, 5 Hardy Street, Oldham, Lancashire.

Notices

THE FOURTH GENERAL MEETING.
MONDAY, 13 JANUARY 1936 AT 8 P.M.

The Fourth General Meeting of the Session, 1935-36, will be held on Monday, 13 January 1936, at 8 p.m., for the following purposes :—

To read the Minutes of the Third General Meeting held on 2 December 1935 ; formally to admit members attending for the first time since their election.

To announce the Council's nomination for the Royal Gold Medal, 1936.

To read the Council's Deed of Award of Prizes and Studentships, 1936.

The Hon. Humphrey A. Pakington [*F.*] to read a criticism of the designs and drawings submitted for the Prizes and Studentships, 1936.

R.I.B.A. ANNUAL DINNER 1936

The Annual Dinner will take place on Monday, 3 February 1936, at 7 for 7.30 p.m., in the R.I.B.A. Henry Florence Hall, 66 Portland Place, W.1. Full particulars were contained in the circular letter to members enclosed with the last issue of the JOURNAL.

R.I.B.A. ANNUAL RECEPTION

The Council have decided to hold a Reception at the R.I.B.A. on Wednesday, 20 May 1936, from 9 p.m. to 12 p.m. Further details will be published in due course.

THE USE OF THE TITLES "CHARTERED ARCHITECT" AND "REGISTERED ARCHITECT"

Now that the Registration Act is in force the Council have been asked to give advice with regard to the best way to use the title "Registered Architect" by members of the R.I.B.A. who have been placed on the Register, and who already have the right to use the designation "Chartered Architect."

The Council recommend that members of the R.I.B.A. who have been registered should use the designation "Chartered and Registered Architect."

ASSOCIATES AND THE FELLOWSHIP

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 9 March 1936, they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 18 January 1936.

LICENTIATES AND THE FELLOWSHIP

The attention of Licentiates is called to the provisions of Section IV, Clause 4 (*b*) and (*cii*), of the Supplemental Charter of 1925. Licentiates who are eligible and desirous of transferring to the Fellowship can obtain full particulars on application to the Secretary R.I.B.A., stating the clause under which they propose to apply for nomination.

BRITISH ARCHITECTS' CONFERENCE, SOUTHAMPTON, 24-27 JUNE 1936

The Annual Conference next year of the Royal Institute of British Architects and of its Allied and Associated Societies will take place at Southampton from 24 to 27 June 1936.

The Hampshire and Isle of Wight Architectural Association have in hand the preparation of a most attractive programme and particulars will be issued in due course.

CESSATION OF MEMBERSHIP

Under the provisions of Bye-law 21, the following have ceased to be members of the R.I.B.A. :—

As Fellow :

Herbert Humbley Archer.

As Associates :

Christopher John Brooks.
David Shearer Cullen.
Terence Ernest Heysham.
Percy Turner.
Enoch Williams.

As Licentiates :

Frederick Edward Halford.
Frank James Robinson.
Seth Stephens.
Michael J. Tighe.
John Halsted Waterworth.

Competitions

The Council and Competitions Committee wish to remind members and members of Allied Societies that it is their duty to refuse to take part in competitions unless the conditions are in conformity with the R.I.B.A. Regulations for the Conduct of Architectural Competitions and have been approved by the Institute.

While, in the case of small limited private competitions, modifications of the R.I.B.A. Regulations may be approved, it is the duty of members who are asked to take part in a limited competition to notify the Secretary of the R.I.B.A. immediately, submitting particulars of the competition. This requirement now forms part of the Code of Professional Practice in which it is ruled that a formal invitation to two or more architects to prepare designs in competition for the same project is deemed a limited competition.

BURY : NEW TOWN HALL

The Council of the County Borough of Bury invite architects of British nationality domiciled in the United Kingdom to submit, in competition, designs for a new Town Hall.

Assessor : Mr. J. Hubert Worthington, O.B.E. [*F.*].
Premiums : £500, £300 and £150.
Last day for receiving designs : 31 December 1935.
Last day for questions : 30 September 1935.

CARDIFF : NEW GENERAL HOSPITAL

The Glamorgan County Council are proposing to hold a competition for a new General Hospital, and Mr. E. Stanley Hall [*F.*] has been appointed to act as Assessor. No conditions are available yet.

DUNDEE : COLLEGE OF ART

The Dundee Institute of Art and Technology are to hold a competition for the Duncan of Jordanstone College of Art, and Mr. Howard W. Burchett [*A.*] has been appointed to act as Assessor. Conditions are not yet available.

EDMONTON : NEW TOWN HALL BUILDINGS

The Edmonton Urban District Council are proposing to hold a competition for new Town Hall Buildings, and Mr. E. Berry Webber [*A.*] has been appointed to act as Assessor. No conditions are available yet.

HARPENDEN : NEW PUBLIC HALL

The Harpenden Urban District Council invite architects of British nationality and domiciled in the United Kingdom to submit in competition designs for a new Public Hall.

Assessor : Mr. Robert Lowry [*F.*].
Premiums : £100, £75 and £50.
Last day for receiving designs : 1 March 1936.
Last day for questions : 31 December 1935.

HARROW : NEW MUNICIPAL OFFICES

The Urban District Council of Harrow invite architects of British nationality to submit, in competition, designs for new Municipal Offices.

Assessors : Mr. C. H. James [*F.*] and Mr. S. Rowland Pierce [*A.*].

Premiums : £350, £250 and £150.

Last day for receiving designs : 24 January 1936.

Last day for questions : 4 November 1935.

Conditions of the competition may be obtained on application to Mr. Vernon Younger, Clerk of the Council, Council Offices, Stanmore, Middlesex. Deposit £2 2s.

LUTON : NEW SECONDARY SCHOOL

The Bedfordshire County Council are proposing to hold an open competition for a new Secondary School for Boys at Luton, and Professor W. G. Newton [*F.*] has been appointed to act as Assessor. No conditions are available yet.

NEWCASTLE-UNDER-LYME : BLOCK OF SHOPS AND OFFICES

The Borough of Newcastle-under-Lyme are proposing to hold a competition for a new Block of Shops and Offices, and Mr. H. S. Fairhurst [*F.*], of Manchester, has been appointed to act as Assessor. No conditions are available yet.

ROTHESAY : NEW MUNICIPAL PAVILION

The Rothesay Town Council invite Registered Architects who have been resident and/or practising in Scotland for at least two years to submit, in competition, designs for a new Pavilion which it is proposed to erect in Argyle Street, Rothesay.

Assessor : Col. J. Maurice Arthur, C.M.G., D.S.O. [*F.*].

Premiums : £200, £100 and £50.

Last day for receiving designs : 7 January 1936.

Last day for questions : 26 November 1935.

Conditions of the competition may be obtained on application to the Town Clerk, Municipal Buildings, Rothesay.

SALISBURY, SOUTHERN RHODESIA : NEW PARLIAMENT HOUSE

The Government of the Colony of Southern Rhodesia invite architects of British citizenship to submit, in competition, designs for a new Parliament House to be erected at Salisbury Southern Rhodesia.

Assessor : Mr. James R. Adamson [*F.*].

Premiums : £500, £300, £200 and £100.

Last day for receiving designs : 31 January 1936.

Last day for questions : 26 August 1935.

Conditions of the competition may be obtained :—

(*a*) in England from the High Commissioner for Southern Rhodesia, Crown House, Aldwych, London, W.C.2.

(*b*) in South Africa from The Director of Public Works, P.O. Box 365, Salisbury, Southern Rhodesia. Deposit £2 2s.

SOUTHPORT : NEW CIVIC BUILDINGS

The Southport Town Council invite architects of British nationality to submit, in competition, designs for new civic buildings, comprising police headquarters, fire station, courts, etc., on the " Woodlands " site.

Assessor : Mr. E. Vincent Harris, O.B.E. [*F.*].

Premiums : £300, £200 and £100.

Last day for receiving designs : 29 February 1936.

Last day for questions : 1 January 1936.

Conditions of the competition may be obtained on application to Mr R. Edgar Perrins, Town Clerk, Town Hall, Southport. Deposit £1 1s.

NORTH BRITISH ARCHITECTURAL STUDENTS ASSOCIATION COMPETITIONS

The North British Architectural Students' Association invite members (i.e., members of Schools and/or Allied Societies at Manchester, Glasgow, Edinburgh, Leeds, Sheffield, Hull and Newcastle) to submit, in competition, designs for :

1. A Church of England Chapel.

   Assessor : Mr. H. L. Hicks [*F.*].

   Prize : 10 guineas, presented by London Brick Co. and Forders, Ltd.

2. A Control Tower and Waiting Room for an Aerodrome.

   Assessor : Mr. R. Bradbury [*A.*].

   Prize : 10 guineas, presented by The Cement Marketing Co., Ltd.

Last day for receiving designs : 31 January 1936.

Conditions may be obtained on application to the Hon. General Secretary, N.B.A.S.A., School of Architecture, Armstrong College, Newcastle-upon-Tyne, 2.

COMPETITION FOR JOINT RAILWAY RECEIVING OFFICES IN LONDON

The four main railway companies (L.N.E.R., L.M.S., G.W.R. and Southern) are proposing to hold a competition for a design for Standard Joint Railway Receiving Offices in London, and the following have been appointed to act as Assessors : Mr. L. H. Bucknell [*F.*], Mr. C. Grasemann, Mr. W. H. Hamlyn [*F.*], Mr. Charles Holden [*F.*], Vice-President, R.I.B.A. No conditions are available yet.

COMPETITION RESULT

CHADDERTON : NEW ELEMENTARY SCHOOL

1. Messrs. Taylor and Simister [*F.*] (Oldham).

Members' Column

Owing to limitation of space, notices in this column are restricted to changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and appointments vacant. Members are reminded that a column in the Advertisement Section of the Journal is reserved for the advertisements of members seeking appointments in architects' offices. No charge is made for such insertions and the privilege is confined to members who are definitely unemployed.

ARTICLED PUPIL

Essex.—A vacancy occurs with Architect with old and extensive practice.—Box 2125, c/o Secretary R.I.B.A.

PARTNERSHIP WANTED

L.R.I.B.A., age 33, independent means, wide experience modern domestic and factory work, wishes to collaborate with established Architect with a view to increase practice.—Box No. 1712, c/o Secretary R.I.B.A.

JUNIOR PARTNERSHIP WANTED

A.R.I.B.A., age 31, with wide experience and sound professional connections at home and in Far East, desires to meet senior member with view to partnership. Would prefer to give keen reciprocal services in lieu of premium, or by arrangement.—Box No. 1811, c/o Secretary R.I.B.A.

JUNIOR PARTNERSHIP WANTED

ASSOCIATE, with ten years' experience with good Architects, on all kinds of work, wishes to obtain a Junior partnership in Birmingham or immediate vicinity ; or a position with that end in view. Has good connections. Some capital available.—Box No. 5125, c/o Secretary R.I.B.A.

PRACTICE IN INDIA FOR DISPOSAL

OPPORTUNITY to acquire member's practice well established in India with valuable connection leading European firms in district. Deferred payments from profits. Principal will work with purchaser for agreed period if desired. Full particulars in confidence on application (which should give information regarding education, age and experience) to Box No. 1812, c/o Secretary R.I.B.A.

OFFICES TO LET

TWO small communicating rooms in new building near Hanover Square to let, part-furnished, at a moderate inclusive rental. Period by arrangement.—Apply Box No. 2011, c/o Secretary R.I.B.A.

UNFURNISHED ROOM TO LET

ASSOCIATE who has recently taken an office in the Temple has one room to let unfurnished. Suitable for a young architect commencing practice.—Apply, Box No. 1612, c/o Secretary R.I.B.A.

NEW TELEPHONE NUMBER.

THE TELEPHONE NUMBER of Mr. H. Ackhurst Scrase [*L.*] is now London Wall 4851-2.

CHANGES OF ADDRESS

MR. R. SEIFERT [*A.*] has removed his office to 1-5 Broad Street Place, E.C.2. (Tel. National 5190.)

Mr. OLIVER LAW [*A.*] has removed his office from 6 Pump Court, to 11 King's Bench Walk, Temple, E.C.4. Telephone No. Central 1400.

Mr. WINSTON WALKER [*A.*] has changed his address from 10 Trafalgar Square, Chelsea, to 6 Gregory Place, Kensington, W.8.

THE FIRM of Campbell F. Cargill, of Stebbing, Essex, will in future be known as Campbell Cargill [*L.*] and Winston Walker, A.A.Dipl. [*A.*]. The address of the firm is Town Hall, Dunmow, Essex.

L. BENNETT [*L.*], of 12-15 Dartmouth Street, S.W.7, has now opened a sub-office at 18 Hill Street, St. Helier, Jersey, C.I., where he will be pleased to receive trade catalogues.

Architects' and Surveyors' Approved Society

ARCHITECTS' ASSISTANTS' INSURANCE FOR THE NATIONAL HEALTH AND PENSIONS ACTS

Architects' Assistants are advised to apply for the prospectus of the Architects' and Surveyors' Approved Society, which may be obtained from the Secretary of the Society, 26 Buckingham Gate, London, S.W.1.

The Society deals with questions of insurability for the National Health and Pensions Acts (for England) under which, in general, those employed at remuneration not exceeding £250 per annum are compulsorily insurable.

In addition to the usual sickness, disablement, and maternity benefits, the Society makes grants towards the cost of dental or optical treatment (including provision of spectacles).

No membership fee is payable beyond the normal Health and Pensions Insurance contribution.

The R.I.B.A. has representatives on the Committee of Management, and insured Assistants joining the Society can rely on prompt and sympathetic settlement of claims.

A.B.S. Insurance Department

PENSION AND FAMILY PROVISION SCHEME FOR ARCHITECTS

This scheme has been formulated by the Insurance Committee of the Architects' Benevolent Society and is available to all members of the R.I.B.A. and its Allied and Associated Societies.

The benefits under the scheme include :—

(1) A Member's Pension, which may be effected for units of £50 per annum, payable monthly and commencing on attainment of the anniversary of entry nearest to age 65. This pension is guaranteed over a minimum period of five years and payable thereafter for the remainder of life.

(2) The Beneficiary's Pension, payable as from the anniversary mentioned in Benefit No. 1, but to the widow (or other nominated beneficiary) if the member dies before age 65. The amount of this pension is adjusted in accordance with the disparity between the ages of the member and his wife.

(3) Family Provision. Under this benefit a payment of £50 yearly is made to the dependent from the date of death of the member prior to age 65 until attainment of the anniversary previously mentioned, after which benefit No. 2 becomes available.

Provision can be made for any number of units (of £50 per annum) up to a maximum of £500 per annum.

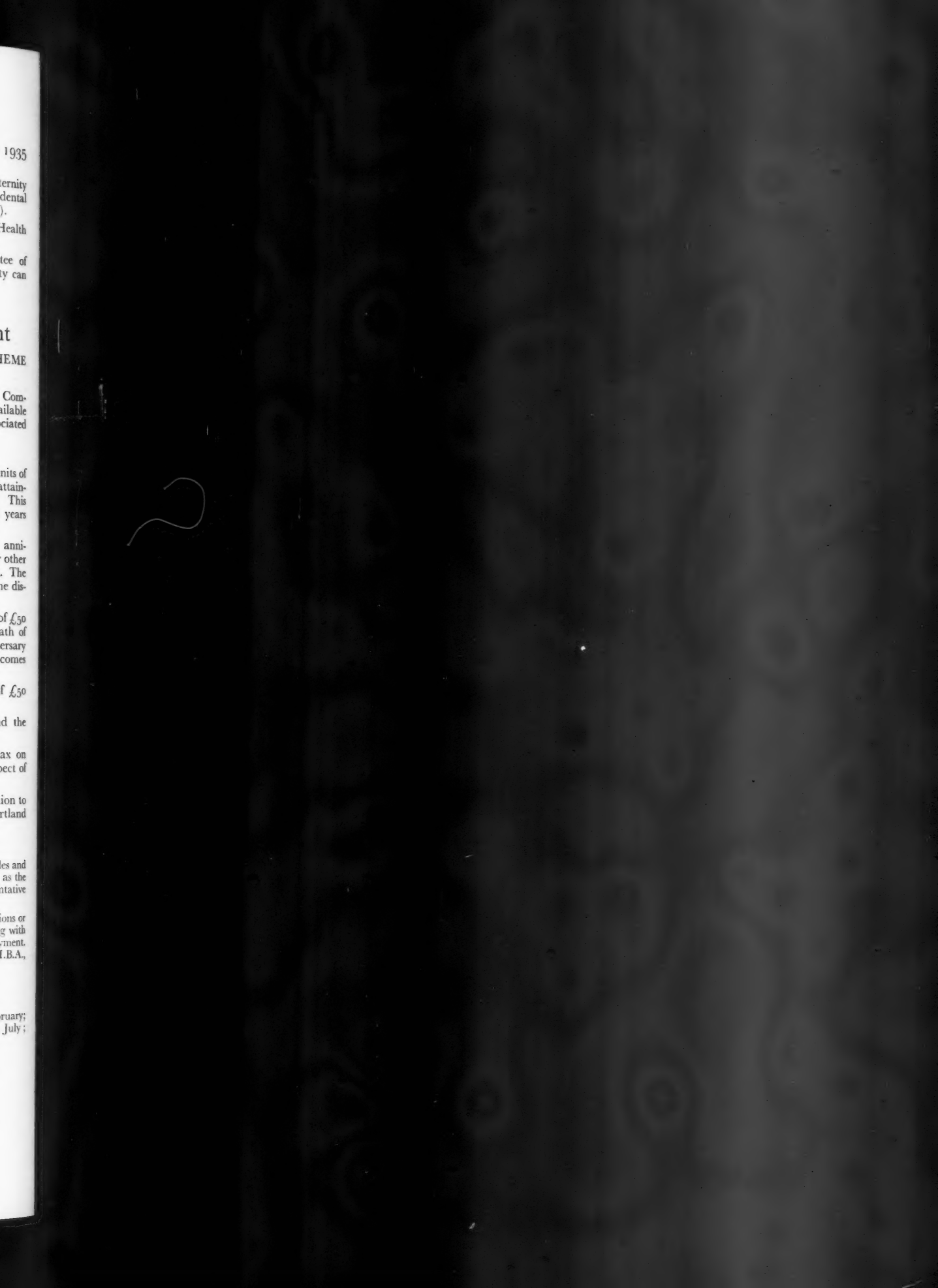
Pension benefit only may be secured if desired and the pension commuted for a cash sum.

Members are entitled to claim rebate of Income Tax on their periodical contributions to the scheme both in respect of pension and of family provision benefit.

Full particulars of the scheme will be sent on application to the Secretary, A.B.S. Insurance Department, 66 Portland Place, W.1.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expressions of the Institute.

Members sending remittances by postal order for subscriptions or Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A., and crossed.

R.I.B.A. JOURNAL

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